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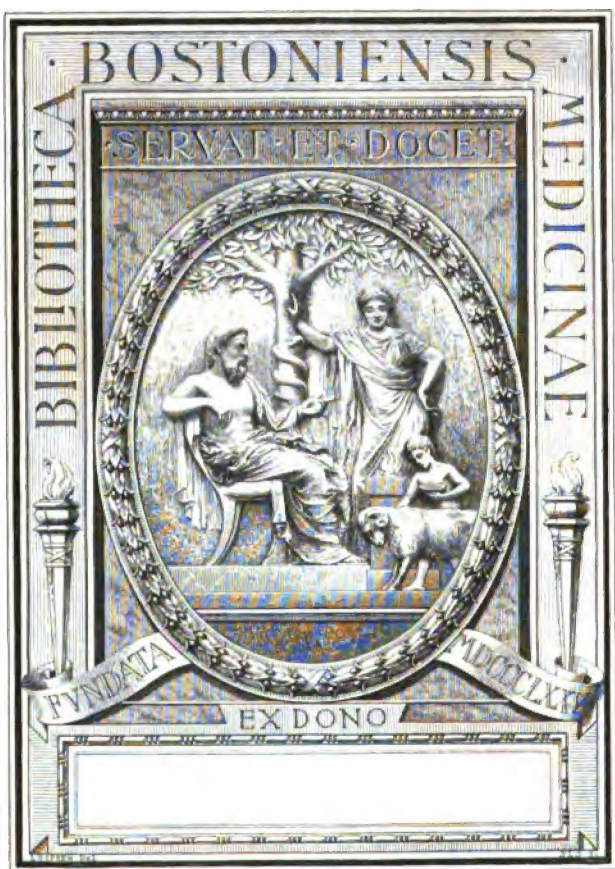
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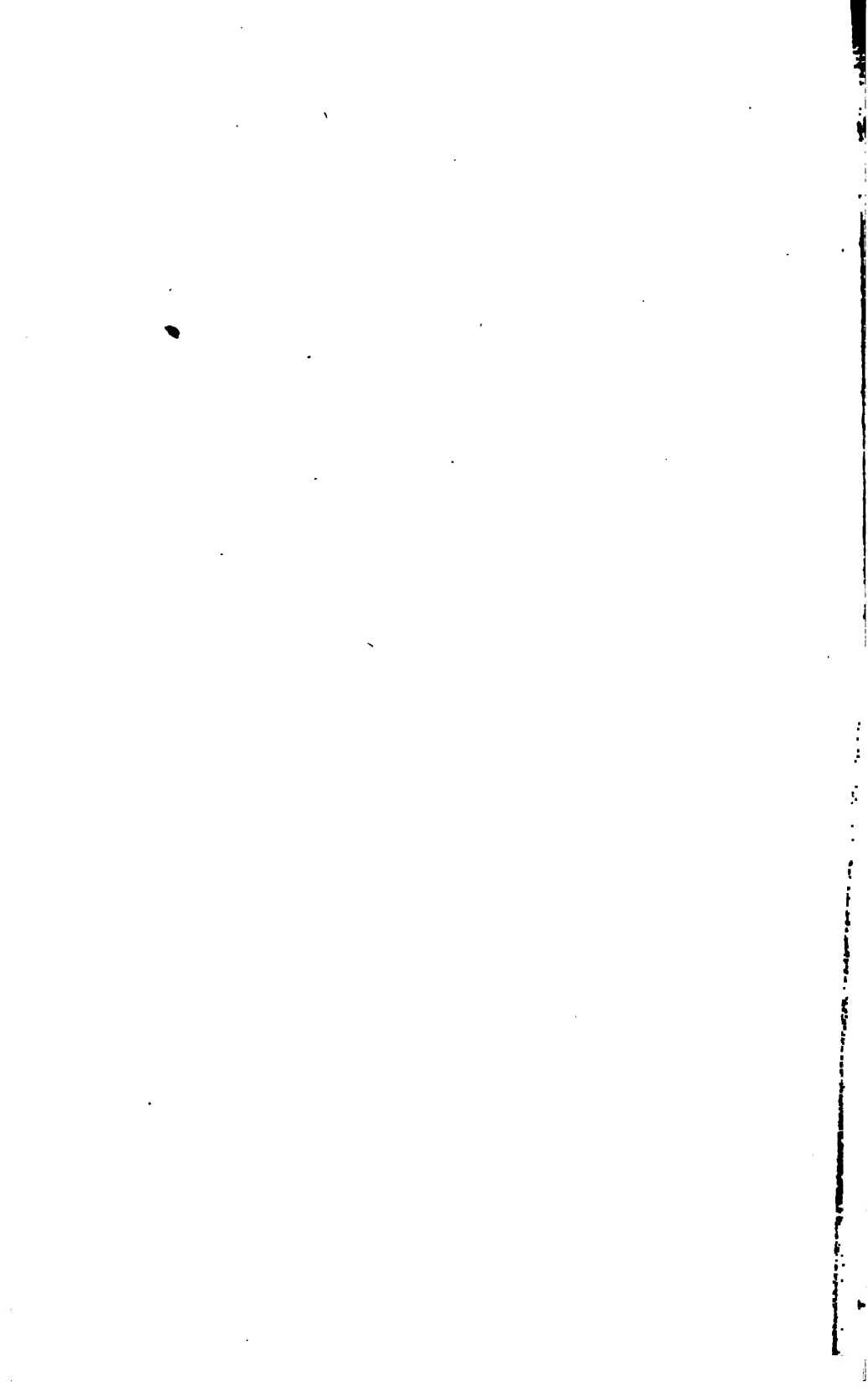
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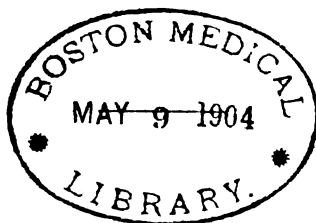


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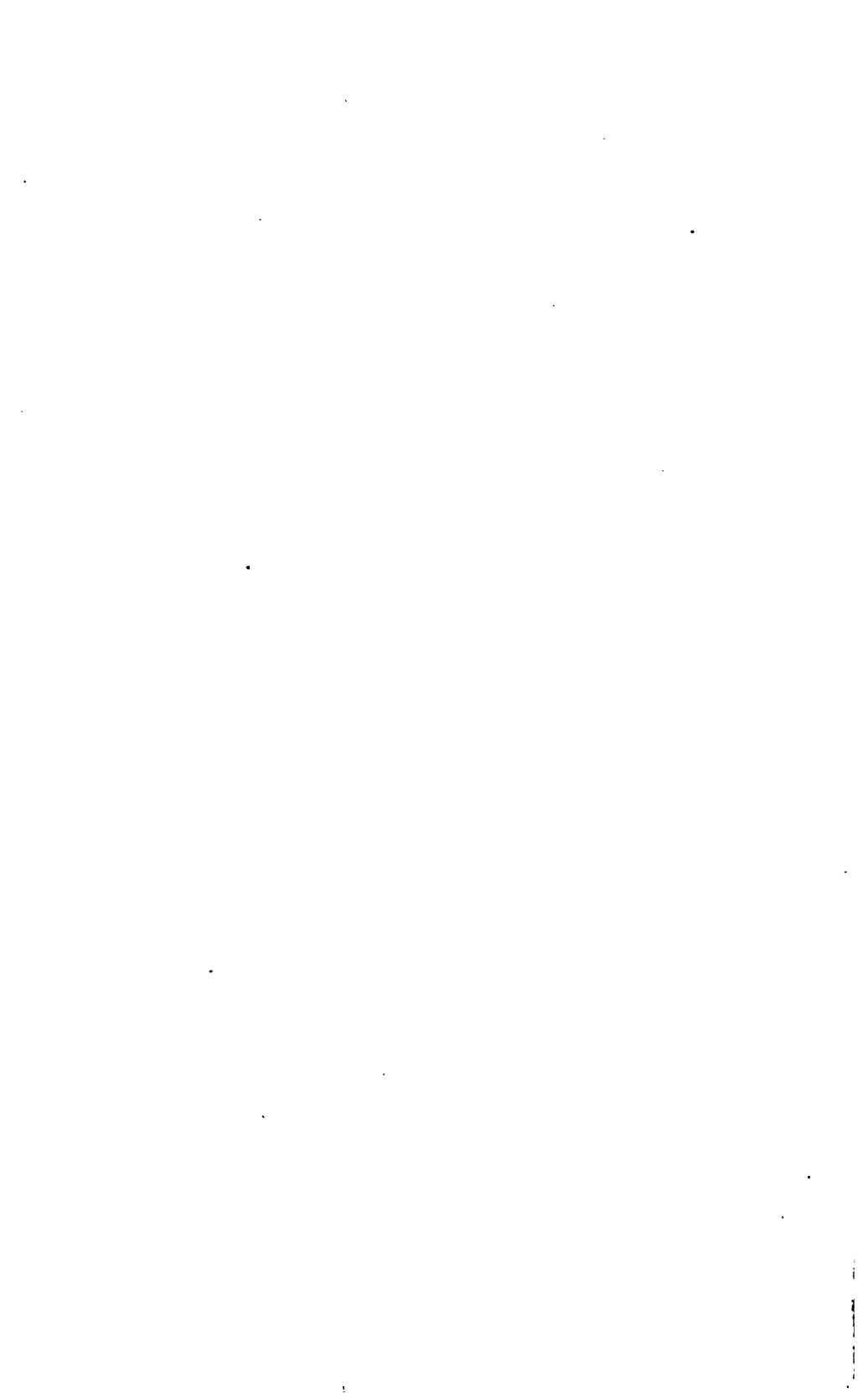
EYE AND EAR HOSPITAL

REPORTS.

NUMBER I.



JANUARY, 1894.



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MANHATTAN
EYE AND EAR HOSPITAL
REPORTS.

NUMBER 1.

103 PARK AVENUE,
NEW YORK.

JANUARY, 1894.

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CLINICAL CASES.

OREN D. POMEROY, M. D.

REMOVAL OF A ROUND CELLED SARCOMA OF THE ORBIT WITHOUT RETURN. A SIMILAR TUMOR REMOVED FIVE YEARS AGO.

Alice C——, aged 13, applied to the Hospital on November 6th, 1891, for a tumor in the upper part of the orbit, about the size of a hickory nut. The eyeball was pushed somewhat downward and the upper eyelid was pushed forward. The patient states that five years ago she had a similar tumor removed from the same locality. A linear cicatrix, extending the whole length of the upper eyelid, shows the incision made in the operation.

I removed the tumor by first making an incision in the outer canthus, half an inch in length. The upper conjunctival cul-de-sac was opened by means of scissors, when the tumor was felt by the finger which was principally used in enucleating it, aided by the handle of the scalpel and the scissors.

The tumor seemed granular and somewhat friable; it could be broken up easily by the finger. The tumor cavity was washed out with quite hot water and the eye was closed by a pressure bandage, the external canthus being sutured. The recovery was prompt; there was no noticeable reaction.

The sight of this eye was $\frac{20}{100}$ and that of the fellow $\frac{20}{20}$.

The movement of the eye was only slightly restricted upwards and outwards. Dr. F. T. Reyling, Pathologist to the Hospital, examined the tumor and pronounced it a small round celled sarcoma, and presumably of great malignancy. Under the circumstances it seems fortunate that she went five years without return of the tumor, and that so far there has been no return.

I would call attention to the mode of removal. It will be noticed that my predecessor made an incision through the upper eyelid, which was plainly unnecessary.

A CASE OF BLEPHAROSPASM CURED BY CANTHOTOMY.

Annetta R—, aged 47, has violent blepharospasm the movement is almost constant in each orbicularis. The vision is perfect and the manifest hypermetropia is + 1D. in each, with a greater amount by the ophthalmoscope. Eye muscles well balanced.

On September 15th a thorough canthotomy was done on each eye, and in ten days there was little or no spasm. On November 6th, the spasm seems to be returning. On November 20th, the spasm only noticeable. On January 27th, the patient seems cured. During the course of treatment, anti-pyrine, salicylate of soda, strychnia cannab. indica, hyoscyamine; pill of iron, quinine and arsenic, were suggested and used by the nervous department, (Dr. Booth). These all had apparently little or no effect.

Some years ago corimin was highly extolled, but I never accomplished much with it. Most of these cases have not been cured by me, whatever treatment was adopted.

One case which I cannot find, was operated on by canthotomy without result. Afterwards a compound hypermetropic astigmatism was corrected, and the patient was nearly cured. If in these cases there was any faulty muscular balance, I should correct it.

A CASE OF HAEMORRHAGIC IRIDO-CYCLITIS, THE CHARACTER OF WHICH WAS LARGELY MODIFIED BY PERSISTENT POUULTICING.

Carrie McD—, aged 38, says that two weeks ago she wakened in the morning with the left eyelids stuck together with secretions, the eyeballs being considerably reddened. During the next two weeks the eye was poulticed alternately with bread and water, and tea leaves and potatoes, the poultices being kept on night and day. On presenting herself at the Hospital, the left eye showed considerable ciliary congestion, the pupil was adherent to the lens, there was a considerable mass of lymph adherent to the pupil, and the anterior chamber was half filled with blood. The T. was — 1½ and there was only perception of light—little or no pain. The treatment was antiseptic cleansing, and atropine three times daily.

In eight days the blood had all absorbed and the vision was $\frac{10}{60}$. In another sixteen days the vision had come up to $\frac{20}{60}$, and the ciliary congestion had entirely disappeared.

The eye seemed entirely convalescent. The T. was slightly subnormal but the projection was perfect.

The lymph had disappeared and the pupil was somewhat adherent on either side, but by the use of atropine there was a considerable sized pupil oval in shape, the longer diameter being vertical.

The interest in this case centers on the pathogenetic factor. How much influence had the poulticing in modifying the disease, for she evidently had trouble before the treatment commenced, the exact nature of which was not apparent. There was no syphilis, and we are perhaps compelled to the admission of irido-cyclitis from the beginning, but modified in character by the persistent poulticing.

REMOVAL OF A CATARACTOUS MEMBRANE, BY FORCEPS WITH RESULT-
ING VISION OF $\frac{20}{XX}$.

Mr. H. A. M—, aged 25. has a membrane in the left eye, the remains of a traumatic cataract. The injury was inflicted several years since. The eye counts fingers at three feet.

The membrane was thought to be too dense to permit of its being cut across by a Graefe knife, or of being cut or torn open by the two needle operation, and it was decided to remove it entire, through a kerotome wound if possible.

After the incision in the cornea was made, from above, a sharp hook was introduced, and the membrane was found to be so dense and hard that even the sharp hook failed to penetrate it. A blunt hook was then introduced, which caught the membrane in its lower border. Some traction was used but it doubled on itself sufficiently to prevent free delivery, and the manoeuvre was discontinued.

Pressure, as might be expected, failed. Back tooth forceps were then tried, but failed to engage with the membrane. It seemed as hard and impervious as an untanned hide. An iridectomy was then done. A pair of strong iridectomy forceps were then used, by placing one blade behind the membrane, and the other in front, catching it at its upper portion, when by slow traction the membrane was drawn out without wrinkling or doing much violence to the eye. There were a few drops of vitreous following the removal. The eye was bandaged and treated in the usual manner.

The reaction was almost nil and in two weeks the recovery was complete.

Vision with +. 10 D. = $\frac{2}{3}$.

This case is reported because of its complete success, and as illustrating most of the procedures practiced in similar cases. The forcible removal of cataractous membranes is by no means always a safe procedure. If there is considerable adhesion in the ciliary region it may be necessary to abandon this method.

Escape of vitreous often will occur, which may jeopardize the integrity of the organ.

The two needle operation might have succeeded in this case, but the stop needle would probably have had to be used as a drill to make an aperture in the membrane. In place of the second needle I use a knife needle which may tear an opening in the membrane if it fails to cut. In this latter operation, it may be better done if an assistant fixes the eye with forceps.

THE SUCCESSFUL REMOVAL OF A LUXATED LENS FROM THE EYE BY
MEANS OF THE AGNEW BIDENT.

Maria S——, aged 52, was struck by a ball on the left eye, fifteen months since. For a few days there was some redness and soreness, but it soon disappeared.

During the last two months the eye has been somewhat reddened and gives her pain.

The right eye is myopic — 5 D, and the left is nearly emmetropic.

A luxated lens in the vitreous chamber of the left was observed, but so far removed in the fundus oculi as to not encourage efforts at removal. She was placed in bed with the face downward, so as to induce the lens to fall into the anterior chamber, or to come sufficiently forward to be reached by the "Bident."

This failed and the patient was sent home to report occasionally.

In a few days the patient returned with the lens in the anterior chamber. She was etherized in a sitting posture and effort was made to remove the lens without the bident. On grasping the eyeball with fixation forceps preliminary to making a cataract section, the lens instantly receded deeply into the vitreous chamber and nothing further was attempted. The patient was directed to return home, and at any time the

lens made its appearance in the anterior chamber, to present herself, and another effort to remove it would be made. I had decided to thrust the bident into the eye without ether, and with no fixation desiring to get behind the lens, before it could by any possibility escape.

A few days afterwards she came to the Hospital with the lens resting in the anterior chamber. Cocaine was instilled to the point of anæsthesia, and while standing, the bident was thrust behind the lens, and it was found impossible to make the counter puncture, when the fixation forceps was applied and this step was easily accomplished. An upward section was then made and after some manœuvring with the iris repositor the lens was removed without loss of vitreous. The removal of the bident then came, which so frequently is accomplished by loss of vitreous. In this instance I caused a stout probe in the hands of an assistant to be firmly pressed on the eyeball at the point of entrance of the bident to offer support, when the latter, with a little difficulty, was removed, and not more than five drops of vitreous escaped. The after treatment was done in the usual manner, and the patient made a good recovery in twenty days.

After a little there was found to be a moderate irido-dialysis, which has apparently done no harm.

This accident undoubtedly resulted from the violence incident to the removal of the lens by the repositor.

I infer that the lens was somewhat wedged in the anterior chamber from the bident being entered with insufficient depth, a fault very likely to occur in the desire to bring the lens sufficiently forward.

When the patient was discharged, the vision was $\frac{5}{60}$ with + 9 D.

The eye was perfectly quiet and the tension was about normal for an aphakial eye.

This case is reported somewhat in detail, as it is believed that had any other procedure been adopted the eye would probably have been spoiled.

I place great stress on the use of the probe to support the eye when the bident was removed.

REMOVAL OF A TRANSPARENT STAPHYLOMA OF THE CORNEA, ABOUT TWO AND A HALF LINES IN DIAMETER, BY THE SINGLE NEEDLE OPERATION.

William S——, aged 17, has a transparent coniecty of the right cornea at its upper and inner portion, measuring about

two and a half lines at its basal diameter. It interferes very much with vision. There is no history of a previous keratitis and the origin of the trouble is obscure.

A small sharp and delicate needle armed with a fine silk suture was passed through the ectasia at its base. A Graefe knife punctured this at the center of its base, passed through, and made a flap on its upper side, including half the conicity. The opposite portion was removed by scissors, when the resulting wound was closed by the suture attached to the needle previously introduced.

Eye closed with bandage; atropine instilled.

Recovery prompt, no special reaction, iris free and normal. The suture was removed in 48 hours, and the wound had perfectly closed. No observable opacity; sight improved. In ten days he was discharged.

Returned to the Hospital from time to time. Four days after last note there was some injection with lachrymation; iced cloths used and atropine, followed after two days by the pressure bandage. After fourteen days the eye was completely cured, leaving an opaque spot less in size than a pin's head (about one millimetre). During the healing there was sometimes a little bulging, but ultimately the cornea seemed to have the same curvature everywhere. Record says, "excellent result." The vision, from some oversight, was not tested.

REMOVAL OF A FOREIGN BODY FROM THE IRIS BY IRIDECTOMY

George K——, aged 14, attempted to cut a piece of wire in a wire fence with a chisel, when a piece struck him in the left eye near the infero-temporal portion of the cornea, apparently entering the iris, as there was an elevated ridge extending from its periphery to near the pupil.

The patient was etherized and a wound made in the corneal margin with a keratome. Iris forceps were passed in to seize the iris with a view of doing an iridectomy, but the forceps, on account of the rigid condition of the iris, failed to engage, and a blunt hook caught the iris which was sufficiently prolapsed.

Attempt was made to incise the iris, but an obstruction in its substance prevented the section. It was concluded that the foreign body was in the way.

The iris was then drawn still further outward and the scissors easily completed the iridectomy. A piece of iron was

found in the excised bit of iris, somewhat thinner than an ordinary pin, and long enough to reach from the periphery of the iris to the pupil.

The patient recovered in a few days, and the sight was apparently perfect.

VERTIGO, DIPLOPIA, ATROPHY OF THE OPTIC NERVES AND DEAFNESS,
PROBABLY DUE TO TUMOR AT THE BASE OF THE BRAIN, PERHAPS
FROM TRAUMATISM.

Gemella C—, aged 39, applied to the Hospital on September 19th, 1890. A little more than two years ago she had a fall, striking the back of her head.

One year ago complained of severe pain in her head. Seven months ago she had diplopia, since which she has gradually lost sight, and is becoming hard of hearing in the left ear. The left side of the face is numb and somewhat swollen. The left side of the tongue is numb; there are prickly sensations in the right arm and leg, and occasionally in the left. The eyes showed intolerance of light four months ago.

H₁₃ complained of weakness of the limbs; right hand weaker than the left; taste good, smell defective, sensation normal; no ataxic symptoms; tongue deviates slightly to the left; reflexes normal; no albumen in the urine.

The optic nerves are swollen so that from + 4 D. to + 5 D. are necessary to see them, with the appearances of blue atrophy. In consultation with the nervous department, Dr. Booth writes: "I have finished the examination of the patient with atrophy of both optic nerves. I am of the opinion the symptoms are due to a gross lesion at the base of the brain, probably a tumor in the middle fossa. Tumor of cerebellum was considered, but the absence of any symptoms referable to the gait and no paralysis, led me to exclude this and hold to the former view."

Weakened bone conduction in the affected ear seems to add confirmation to the diagnosis.

COMPLETE RECOVERY FROM A PENETRATING WOUND OF THE SCLERA,
THE BIT OF IRON INFLECTING IT BEING LODGED IN THE EYE-
BROW, AND WAS REMOVED SOME WEEKS AFTERWARDS.

James C—, aged 30, was struck over the left eyebrow by a piece of iron, which penetrated the upper lid and the sclera,

just behind the ciliary region, from which vitreous protruded. The sight was immediately lost. The anterior chamber was full of blood, and the lid was greatly swollen.

There was only perception of light but the projection was good. The treatment was iced cloths and atropine.

In two weeks the patient had completely recovered with vision $\frac{20}{20}$. The wound in the eyebrow had healed, leaving something of a hard swelling, causing me to suspect that a foreign body might be lodged there.

In thirteen days the patient returned with the eye as on the last observation. The hard swelling in the eyebrow continued and was intolerant of pressure by the fingers and I determined to cut down and see whether anything could be found. Cocaine was injected, and on making an incision, the knife struck a hard substance which was removed by a pair of artery forceps and found to be a piece of sheet iron, more than half an inch in diameter, and weighing twenty-five grains.

The patient recovered promptly enough from this operation.

I inferred that this piece of iron with its cutting edge had penetrated the lid and the sclera without dislodging itself from the eyebrow.

In the earlier part of the case I could not convince myself that the foreign body had lodged in the eyeball, although *phthisis bulbi* might perhaps have been anticipated, as the scleral wound was at least three lines in length.

The case seemed to me to be of sufficient interest to place on record.

AN OPENING IN THE MASTOID SUCCESSFULLY CLOSED BY SUTURES
IN THE INTEGUMENT.

William W——, aged 13, had an opening in the mastoid extending inward about half an inch and having a diameter of about three lines. There was no discharge nor offensive odor.

There was a history of a mastoiditis and a Wilde's incision. The auricle was deformed from what was evidently an inflammatory process concurrent with the mastoiditis.

The edges of the mastoid opening were refreshed, the skin was somewhat undermined and the wound was closed by sutures.

There was no reaction and the cure was complete. Criticism may be offered for closing a cavity which may in the future secrete and reopen its tegumentary covering.

A FATAL CASE OF MASTOIDITIS WITH CHRONIC MIDDLE EAR DISEASE,
ACCOMPANIED BY EXTENSIVE CARIES; NO AUTOPSY.

Mary E. G——, aged 4, applied to the Hospital January 4th, 1889, with otitis media chronica of left ear with a large polypus.

The child was pale and had a strumous look. There was facial paralysis on the side of the affected ear.

The polyp was removed and an incision made over the mastoid. The external table was found to be destroyed by caries. Ten days afterwards the tympanum had again filled with polyps and the opening in the mastoid was found to be filled with granulations. These were removed by forceps and curette and fluid freely passed from the tympanum through the mastoid opening; carious bone everywhere.

Child suffering pain, poorly nourished and looks very badly; temperature, $99\frac{3}{4}^{\circ}$; discharge very foul smelling.

Liq. sod. chlo. dilut. used as a wash; milk punch internally.

March 7th, discharge less, and patient somewhat better, although the pupils are somewhat dilated and not very active.

March 11th, no special change.

March 15th, discharge very profuse, pulse rapid, temperature 99° to 101° .

March 18th, temperature 102° , profuse perspiration and suffers pain; pupils normal.

March 21st, does not sleep, gave laudanum; seem to be evidences of septic infection.

March 22nd, some delirium.

March 23rd, temperature 100° to $102\frac{1}{4}^{\circ}$. Peroxide of hydrogen as a disinfectant; weaker and more emaciated. Is not inclined to sleep and cries as though in pain; Laudanum.

March 27th, is somewhat better and went home.

On April 7th, it was learned that the child had just died with symptoms of septicæmia.

This case is unsatisfactory on all accounts; the treatment was not commenced early enough, was not continuous, the patient was not sufficiently under control, and there was a distinctively strumous habit which favored bone destruction and hindered reparative action. The exact diagnosis was under the circumstances impossible. I did not see the indications for making more effort to remove carious bone.

A FATAL CASE OF CHRONIC SUPPURATIVE OTITIS MEDIA IN AN INFANT
WITH MASTOIDITIS; NO AUTOPSY.

Mary B——, aged 18 months, applied to the Hospital March

5th, 1891. On the previous September the mother noticed signs of facial paralysis, which were followed in a few days by swelling in front and behind the left ear and accompanied by discharge. On presenting herself at the Hospital there was well marked facial paralysis of the left side with chronic suppurative otitis media.

The usual treatment was practiced, the child coming from time to time.

In October, an abscess was noticed over the mastoid region, which was incised, and the external table of the bone was found to be carious.

Antiseptic irrigation was practiced and things progressed favorably, but she stopped coming to the Hospital for four weeks, when she again presented herself and the wound in the mastoid was found to be full of granulations and dead bone. The granulations were removed by the curette, together with some small pieces of carious bone. Granulations were also removed from the tympanum. Water freely passed from the tympanum through the mastoid.

After two weeks of treatment the child seemed not as well; had convulsions.

In the nervous department a diagnosis of meningitis was made. The tympanum and mastoid quickly filled again with granulations.

These were removed by the curette, together with some sequestera of bone. A probe could be passed from the mastoid opening forward and inward in the direction of the tympanum, but much deeper than the latter.

Two or three days after the first convulsion the child had another which lasted for two hours, after which she remained in a semicomatose state for several hours. Temperature, 102°, pulse, 120 and weak. Discharge from the ear, somewhat less. The temperature for the next two days had risen to 102°, the pulse became 140, the eyes were rolled upward, but the pupils were normal, and the coma became profound and death ensued. No autopsy.

This case is similar to several I can recall which had almost identical symptoms.

Was there any fault in the management of the case? There was one misfortune; the patient remained away four weeks at the most critical period, and opportunities were undoubtedly lost.

I believe that keeping the parts open to ensure perfect drainage with the removal of any bits of carious bone and adequate antiseptic irrigation, together with proper nutrition

and stimulation, would have fulfilled all the indications for treatment. Any attempt to remove dead bone extensively, especially at the bottom of the deep fistulous opening having an unknown termination, would have jeopardized the life of the patient.

A CASE OF CHRONIC SUPPURATIVE INFLAMMATION OF THE DRUM CAVITY WITH CARIOUS DESTRUCTION OF THE MASTOID CELLS, CURED BY ONCE REMOVING CARIOUS BONE BY MEANS OF THE CURETTE AND SHARP SPOON.

Elizabeth G.—, aged 60, was attacked on Nov. 25th, 1892, with acute suppurative otitis media in the right ear, which soon resulted in perforation of the membrane and a profuse purulent discharge. After a few days a fistulous opening appeared in the mastoid, which exists at the present time, Jan. 4th, 1892. Carious bone is detected by means of a probe passed into this opening. There is profuse discharge both from this and the meatus.

The patient was etherized and the fistula was cut across so as to make a sufficient opening in the soft parts when the mastoid was found to present a vast cavity devoid of cells and communicating freely with the tympanum. This was everywhere bounded by carious bone. There were few granulations.

By means of the curette and sharp spoon the whole carious region was thoroughly scraped and a number of small bits of dead bone were removed. The opening was loosely packed with the bichloride gauze and a bandage applied. This was removed daily and the parts were thoroughly irrigated with 1 to 5000 of the bichloride of mercury.

The patient being much depressed was given Kenney's beef tea and whiskey. On January 6th, the day of the operation, the temperature rose from $98\frac{1}{2}^{\circ}$ to 100° . Subsequently until February 19th, the temperature would be normal in the morning, rise to about 99° , sometimes a little more, then slightly less, when it became normal. Anodynes were occasionally necessary to relieve pain, but usually cleansing the part, sufficed. Tonics freely used.

On March 14th, the mastoid opening is nearly healed, being filled at the bottom with reparative material.

This case is interesting from the fact of its prompt recovery after a single operation. I am often obliged to repeat

the operation several times' before reparative action supervened. Indeed in some cases there will be no signs of repair even after removal of dead bone, perfect antiseptic irrigation and the most careful attention to the patient.

REMOVAL OF EXOSTOSES FROM THE MEATUS OF EACH EAR BY MEANS
OF THE CHISEL.

Morris B—, aged 56, has exostoses in each auditory canal, located in the outer portion of the osseous meatus, posteriorly, and nearly filling the canals. The hearing was unaffected. On March 20th, 1889, the patient was etherized, and the exostosis of the left canal was removed. A Politzer chisel, a little less in diameter than the auditory canal was used. It was inserted at the base of the tumor and a few slight blows from the raw hide mallet sufficed to accurately crack it off at its base. It had the shape of a split pea and was $3\frac{1}{4}$ lines in diameter. Little reaction resulted. Two weeks subsequent to this, the exostosis of the right was removed. A similar method was at first practiced to that of the left, but the exostosis refused to be cracked across at its base by any reasonable amount of force and the removal of successive layers of the tumor was practiced. Considerable violence must have been used, for there was decided reaction, the patient suffering pain for several days, the canal was much swollen and there was an otitis media set up, which resulted in perforation of the membrane. It however healed promptly. The operation in the left ear served to prove that this method was superior to the dentist's drill, but the right certainly did not. It was a temptation to use the chisel, because its results are so speedy and effective. That may explain the popularity of the drill in mastoid operations. In this case there was no adequate explanation of the pathogenesis of the exostoses. There had been no previous inflammation, no syphilis, either acquired or hereditary. The operation was done to prevent the canals from being completely closed.

REMOVAL OF THE MALLEUS AND INCUS, RESULTING IN MUCH
IMPROVEMENT TO THE HEARING, WHICH WAS LOWERED AFTER A
NEW MEMBRANE HAD FORMED; REMOVAL OF THIS AGAIN IMPROVED
THE HEARING.

Mrs. Bessie W—, aged 36. Has had a chronic otitis media in each ear for ten years. No tinnitus worthy of men-

tion. In the right ear, the loudest shouts may not be understood, there is no hearing for the watch, or for the acoumeter, Finger nails loudly snapped together cannot be heard. Other ear hears loud shouts near the ear and finger nails may be heard at six inches.

The malleus was removed with most of the drum membrane, under ether.

The hearing came up at once to ordinary voice, six inches, finger nails from four to ten inches.

In two weeks the incus was found dislodged in the meatus and was removed by forceps.

In six weeks the discharge had ceased and the hearing was not quite as good.

In two months more a new membrane had fully formed, and she could only hear loud shouts close to the ear, and the finger nails could be heard with difficulty. I then, under cocaine, removed as much of this new membrane as possible, by means of the curette, forceps and knife, and the hearing again came up to its former improved condition.

The patient is much pleased with the present condition, and is likely to return if the hearing lowers. The discharge after the last operation continued three weeks.

If sufficient return of drum membrane occurs to lower the hearing, by acting as an obstruction to the passage of sound waves, I propose to repeat this last operation.

The present state of the patient is, the formation of a cicatrix containing a cleft in front which permits the perforation whistle; no discharge.

A CASE OF SO-CALLED MENIERE'S DISEASE, WITH REMARKS ON ITS
DIFFERENTIAL DIAGNOSIS.

Fanny D—, aged 67, has an otitis media chronica of some years duration, with hearing of watch, $\frac{8}{17}$ in the right and $\frac{3}{10}$ in the left, not improved by Politzer's inflation. Eight years since an icebox cover struck her on the head, and she has had vertigo, tinnitus and nausea up to the present time. Two years ago she had a sunstroke which may have aggravated her symptoms. The nausea and tinnitus are important symptoms, but the vertigo is very aggravated and is growing worse: sometimes actually falls, and usually backwards. She is inclined to sleep excessively. On consultation with the Nervous Department, (Dr. Booth), it was thought that the patient had Menière's disease, the diagnosis being

based on the vertigo, nausea, tinnitus and the history of sunstroke and possibly traumatism from the falling of the icebox cover on her head.

She was placed on large and increasing doses of iodide of potassium, with tincture of iodine on the mastoid.

This case is reported as a possible study of Menière's disease. There are many who do not recognize the existence of Menière's disease, but regard these symptoms as somewhat composite, indicating on the one hand, only middle ear disease, and on the other, disease of the labyrinth.

In this case the bone conduction was not weakened, and there was no certain evidence of labyrinthine disease. Strictly speaking, the diagnosis of Menière's disease should not be made in the absence of positive evidence of labyrinthine complication. If Menière's disease is a misnomer, its complex of symptoms is at least convenient from a diagnostic point of view.

CHRONIC GLAUCOMA. NO OPERATION.

NEIL J. HEPBURN, M. D.

M. M——, aged 55, from Norfolk, Va., admitted to the Hospital on December 16th, 1892, with the following history:

Patient says he always had weak eyes, especially lid trouble. One year ago he used sassafras pith, and they got much better. About six weeks before admission they blurred again and he consulted a physician at home, who told him he had cataract and advised operation. This alarmed him and he came to New York for more expert advice. On admission, his general condition was very good, digestive functions well performed, had had occasional attacks of rheumatism or gout. Good physique, stout, good color. Right eye, lids showing slight chronic conjunctivitis, cornea clear, pupil two thirds dilated, lens clear, no scleral congestion. Tension +1. Ophthalmoscopic examination revealed well marked glaucomatous cup. No alteration in retina or choroid. Field contracted almost to a point. Vision, perception of light.

The left eye presented a counterpart of the appearance of the right except that the field was slightly larger. Vision $\frac{2}{20}$. He stated that he had occasionally seen colored rings around the lamp flame for some months past.

Treatment.—Sol. Eserine (gr i ad $\frac{3}{4}$ i), one drop in each eye three times a day, and internally salicylic acid, ten grains three times a day.

December 25th. Improving. No halos around light. R. V. $\frac{12}{20}$; L. V. $\frac{18}{20}$.

January 6th, 1893. Improvement continues. R. V. $\frac{20}{20}$; L. V. $\frac{20}{20}$ +. Stopped salicylic acid and ordered sat. sol. potassii iodidi, ten drops three times a day, and to increase the dose five drops each day. Field in right eye, one quarter normal; in left eye, one third normal.

January 11th. R. V. $\frac{20}{20}$; L. V. $\frac{20}{20}$. Field in right eye one half normal, in left, two thirds normal. No change in treatment.

January 16th. Reads Jaeger, No. 3, at eight inches with +4.00 o. n. Distant vision same as previous report, not improved by glass. Patient discharged from Hospital and ordered to continue the iodide at home till he reached 75 drops and then discontinue it.

A letter received from the patient some months later leaves the impression that the vision still continues good, as he wished to know how much longer he could continue to wear his reading glasses before changing them.

An interesting incident occurring in the progress of this as well as other cases treated in a similar way is the improvement in the general condition of the patient under treatment. The increase in the appetite and power of digestion and the alleviation or disappearance of the gouty symptoms where these are in active evidence, is very apparent.

It is in this class of cases that the question of operative interference is most debatable, and the opinion appears to be gaining ground that these cases do not do well after iridectomy or sclerotomy, unless supplemented by constitutional treatment.

The great majority of the cases of primary chronic glaucoma appear to be associated with perversions of nutrition, and attention to the restoration of perfect assimilation of nutritive material by the various organs and tissues would be considered good practice in General Medicine and Surgery, especially an amputation or resection is resorted to only when restoration of function by other means fails. Thus it appears that if the restoration of the glaucomatous eye to its sound condition in whole or part can be accomplished without surgical interference, and with equally good results, then operation is not indicated, but rather harmful, in as much as it introduces the element of traumatism in an already weakened organ.

The result of operation (iridectomy or sclerotomy) in this class of cases has been often to leave a doubt whether the operation had been beneficial or not. It is often the only remedy advised, and eserine is decried as useless or positively harmful.

It is the fashion to perform iridectomy in glaucoma; even in the hemorrhagic variety it is advised either to do an iridectomy or remove the eye. And yet, in the great majority of cases of hemorrhagic glaucoma, it is easy to demonstrate the

condition of the blood vessels, and to show that the condition of the eye is only one local manifestation of a general dyscrasia. Enucleation of an eye in hemorrhagic glaucoma is a good deal like the amputation of an arm covered with purpura, so far as remedial value is concerned.

The changes that take place in the serous and fibrous structures of joints and bursæ appear in this affection to have their analogue in the eye, and the disturbance of balance may be either the cause or effect of changed nutrition of the tissues. One thing is certain, and that is the local manifestation of a general condition, and should be dealt with accordingly.

DETACHMENT OF THE RETINA.

JUSTIN L. BARNES, M. D.

IN the *New York Medical Journal*, March 21, 1890, will be found a number of articles on detachment of the retina, by Drs. Emerson, Pomeroy and Webster, which contain the histories of Manhattan interne cases for a number of years. In this paper, owing to the courtesy of the gentlemen concerned, I am enabled to present a further series of cases which have come under observation during a period extending from January 1, 1891 to November 1, 1893. During this time ninety-seven cases were seen, of which number, sixteen were admitted to the Hospital.

These cases are not arranged by chronology, but are divided into two classes: those upon whom no operation was performed, and those upon whom an operation was performed; and an effort has been made to present cases terminating with little or no benefit before those cases which were decidedly improved. One case (16) was a notable success, and is remarkable as the subject of a second detachment and cure in the same eye.

The service of Dr. Pomeroy affords cases 5, 6, 10 and 14; Dr. Webster, cases 2, 3, 9, 11, 12, 15 and 16; Dr. Emerson, cases 1, 7, 8, and 13; Dr. Roosa, case 4. Case 5 was admitted and cared for by Dr. Barnes.

CASE 1. H. G——, aged 65, male, single, Irish, a laborer, received September 11, 1893, with detachment in right eye.

History.—Patient had inflammatory rheumatism in May and June last, recovering late in July. During this period he began to lose vision in his right eye, and experienced pain in the right temporal region, since when his sight has steadily failed.

Condition.—R. V. = $\frac{20}{100}$. L. V. = $\frac{20}{30}$. Ophthalmoscope: retina of right eye detached above. Field cut off below, including the whole macular region.

Treatment.—Bandage and dorsicumbency. On the 24th,

the bandage was removed and patient allowed to leave his bed. The retina was found to be reattached. On the 25th, the retina was again detached, and the patient, declining further treatment, was discharged, with vision the same as before.

CASE 2. I. R. —, female, single, age 24, American, housekeeper, was admitted into the Hospital September 8, 1893. Detachment of left retina.

History.—Nearsightedness from early childhood, and two years since, the right eye having become very myopic, glasses were obtained. Six months ago, the left eye suddenly became dim with increasing loss of vision.

Condition.—R. V. = $\frac{3}{200}$; $\frac{5}{100}$ w. — 12 D. S. L. V. = $\frac{3}{200}$; $\frac{18}{200}$ w. — 14 D. S. Tension minus in both eyes. Ophthalmoscope shows in the right eye, myopia with choroidal changes; in the left, detachment of lower third of the retina; floating opacities in both eyes. Field contracted above.

Treatment.—Dorsicumbent posture in bed, double bandage, and injections of pilocarpine, which latter were alternately discontinued and resumed, periodically, until October 16th, when R. V. = $\frac{2}{200}$ w. — 9.50 D. S. L. V. = $\frac{30}{200}$ w. — 12 D. S., and the patient was discharged, with improved vision and wearing weaker lenses..

CASE 3. A. L. —, male, single, aged 46, Austrian, sailor, presented himself December 2, 1891. Detachment of retina in each eye.

History.—Patient forty-five days ago suddenly lost the sight of both eyes simultaneously while stooping.

Condition.—R. V. = Perception of light; L. V. = ability to count fingers at eight inches. An analysis of the urine shows: acid reaction; sp. gr. 1020; no sugar nor albumen; microscopic examination negative. The ophthalmoscope: no red reflex in the right eye, slight reflex at supero-nasal portion of fundus of left, with complete detachment in both eyes. Projection uncertain.

Treatment.—Pilocarpine injections until December 11th, when the patient, showing no improvement, was discharged.

CASE 4. E. S. —, male, aged 11, Irish, school-boy, was entered at the Hospital November 2, 1892, with detachment of retina of right eye.

History.—He came asking for glasses because he could

not see the blackboard at school well, and his father states that about three years since, the boy sustained a fall, striking on the right temporal region, from which he was insensible for some time.

Condition.—R. V. = $\frac{3}{80}$ w. + 1.50 D. C., ax. 90; L. V. = $\frac{3}{80}$ w. + 3.00 D. C., ax. 90°. Ophthalmoscope: detachment of the right retina in supero-nasal portion. Field cut off infero-temporally.

Treatment.—Dorsicumbency, bandage, pilocarpine injections until the 10th of the month, when they were discontinued two days, and resumed, with the addition of atropia. The field improved considerably. The vision was unimproved at close of treatment, and the patient was discharged on December 3rd.

CASE 5. C. L. L.—, female, aged 21, American, house-keeper, single, entered May 2, 1893, and was placed under treatment for detachment of retina of left eye.

History.—On April 25th, she came to me to secure glasses for nearsightedness. Examined her at this time with the ophthalmoscope and no detachment was then present in either eye. There existed a rather high degree of myopia, accompanied by astigmatism as discovered by the ophthalmometer—and she was directed to return for another examination in order to select suitable glasses. On May 2nd, she reappeared, saying some change had taken place in her left eye within twenty-four hours.

Condition.—R. V. = $\frac{1}{40}$ w. — 6 D. S. \odot — 1.50 c. axis 180°. L. V. = Perception of light, where upon the previous examination, with proper myopic correction the vision was superior to the fellow eye. Ophthalmoscopic details of left eye: luxated lens and large detachment of the retina. There was no known traumatism or other cause. Pupil very irregular and fixed. Field could not be taken.

Treatment.—Dorsicumbent posture in bed, both eyes bandaged, and pilocarpine injections ordered. The tension was decidedly minus, and atropia was instilled. On May 5th, L. V. = fingers at twelve inches, with improved projection. The treatment, bed and pilocarpine, was continued up to May 17th, when with ability to count fingers readily, she was discharged.

Later. This patient reappeared, and examination disclosed a small detachment in the lower part of the *right* fundus, while in the left there were two large detachments below, some large ones above, and the lens could be seen floating

about in the lower part of the vitreous. There was no loss of visual acuity in the right eye. The tension in the left was greatly diminished. To improve her vision — 6 D. S. were ordered and enjoyed. On June 2nd, the pupil of the left eye was discovered to be circular, but the vision had lowered to counting figures doubtfully. Atropia was continued. At the time of this writing, October, 1893, her vision in the afflicted eye is reduced to perception of light, her misfortune being undoubtedly due in large measure to, or at all events, complicated by the dislocated lens.

CASE 6. D. M——, male, married, aged 63, Irish, cutler, came to the Hospital October 7, 1891, with detachment of left retina.

History.—No traumatism.

Condition.—R. V. = $\frac{2}{8}$; without improvement. L. V. = $\frac{1}{100}$. The ophthalmoscope revealed extensive choroidal changes in the right eye, accompanied by myopia; in the left eye, luxated lens, tremulous iris, deep anterior chamber and detachment below, best seen with + 3.00 D. S. The remaining portions of the fundus of this eye best seen, and easily, with — 2 D. S. The iris is bound down with capsulo-iridic adhesions. Field is cut off above to correspond with the detachment.

Treatment.—Rest in bed only. On October 28th the retina was discovered to be entirely reattached, but on the 30th, the detachment reappeared. A day or two later, this condition prevailing, the patient was discharged.

CASE 7. T. S——, male, single, aged 31, Irish, laborer, appeared on August 25, 1893, with a detachment in the right eye.

History.—Specific disease. First noticed failing vision during May previous, with no knowledge of traumatism.

Condition.—R. V. = $\frac{2}{100}$. L. V. = $\frac{3}{8}$. The ophthalmoscope revealed detachment in the inferior and nasal regions, lying in two lateral folds. Field cut off above.

Treatment.—Dorsicumbency, bandage and pilocarpine injections until September 9th, when the bandage was removed and the retina was seen to be completely reattached. Mixed treatment, combined with renewed pilocarpine injections, but with bandage removed and freedom from bed, was administered until September 19th, when the patient, showing no detachment and exhibiting a vision of $\frac{2}{100}$, was discharged.

CASE 8. C. F——, male, single, aged 47, American, editor newspaper, appeared at the Hospital on September 15, 1892, with detachment of the right retina.

History.—The patient has suffered for many years from irido-choroiditis in the left eye, for which he received treatment at various times during exacerbations, at the hands of well-known specialists. About four weeks before presenting himself at the Manhattan he noticed a cloud before the right eye.

Condition.—R. and L. V. = Perception of light. The ophthalmoscope discloses a detachment of the retina of right eye in the supero-temporal region — Projection supero-temporal.

Treatment.—Dorsicumbent position, bandage, and pilocarpine injections. On September 17th, he could count fingers at four feet. Soon after this date he began to complain of epigastric pain and loss of appetite; fever and weakness set in, and on the 24th, the pilocarpine was abandoned. From this time until the end of his stay he suffered greatly from indigestion, fever, low appetite and delirium, and it was at length discovered that he was a confirmed opium eater, when, enough of the drug was administered to secure quiet. After this he improved, his retina became almost completely attached, indeed, only a very small place in the superior part of the fundus refusing to reattach. On the 17th of October, with vision in the right eye amounting to fingers at four feet, he was discharged.

CASE 9. M. F——, male, aged 32, French, married, cigar-maker, was admitted to the Hospital on March 30, 1891. Detachment of right retina.

History.—Six weeks previously was struck on the right temple with a stone, and four weeks later he noticed that the sight of his right eye was failing. Two days later, he discovered that he could distinguish nothing with this eye—the duration is therefore about ten days, and presumably of traumatic origin.

Condition.—R. V. = O; L. V. = $\frac{30}{100}$ w. — 11 D. S. The field of the right could not, of course, be taken, but the ophthalmoscope revealed a complete detachment, best seen with + 2.00 D. S., the disk looming up mistily under — 10 D. S.

Treatment.—Bed, in dorsicumbent pose, with pilocarpine hypodermics and bandage and continued several days. On April 4th, R. V. = $\frac{20}{100}$; $\frac{20}{100}$ w. — 5 D. S; L. V. = $\frac{4}{100}$; $\frac{20}{100}$ w. — 5 D. S. (under atropia). The javal showed no astig-

matism in either eye. The ophthalmoscope gave evidence of some detachment in infero-nasal region. The same treatment was continued a few days, and on April 14th the patient was discharged much benefited.

Later. July 15th, he returned, with two detachments in lower part of the eye, but with useful vision still retained.

CASE 10. J. P.—, male, married, aged 64, Italian, fruit vender, was admitted to the Hospital July 22, 1892, detached retina in left eye.

History.—Three weeks previously he observed a film before the sight of his left eye and added that his vision was steadily declining.

Condition.—L. V. = Perception of light. The ophthalmoscope showed a detachment extending from the vicinity of the nerve through the infero-temporal region. Field limited supero-nasally.

Treatment.—Dorsicumbent posture in bed, bandage, and pilocarpine injections. On August 3rd, the vision in the eye was discovered to be ability to count fingers at five feet, which steadily improved until August 11th, when his vision being $\frac{1}{100}$, he asked leave to return home and was discharged.

CASE 11. L. W.—, female, aged 50, married, American, carpet worker, came into the Hospital March 23, 1891.

History.—She noticed, two weeks since, that whenever she closed her right eye, she could not with the left distinguish any object located in the superior or nasal portions of the field.

Condition.—R. V. = $\frac{2}{3}$ +; L. V. = $\frac{2}{3}$. No improvement with glasses. The ophthalmoscope revealed a large detachment in the lower part of left eye, with clear media. Field cut off above.

Treatment.—Operation; scleral puncture was performed under cocaine, without retinal incision, and a large quantity of subretinal fluid evacuated. Patient was put to bed and eyes bandaged. On March 25th, the eye was opened and the field, roughly estimated, was nearly perfect. The ophthalmoscope showed perfect reattachment. Atropia was instilled and the eyes rebandaged. March 26th, a small detachment was discovered in infero-nasal region. Atropia, bandage and pilocarpine hypodermics were ordered, and continued up to April 3rd, without securing marked effect. On April 7th the field was taken, found to be as imperfect as originally, and the patient was discharged without gain or loss.

CASE 12. L. G——, female, single, aged 43, American, cashier, presented herself on December 8, 1892, with detachment of the right retina.

History.—Patient says she noticed, six days ago, that suddenly the vision of the eye failed, leaving a blue haze before her sight.

Condition.—Ophthalmoscope shows a central detachment; the field very much contracted, with central scotoma, V. = P. L.

Treatment.—Rest in bed, dorsicumbency, pilocarpine injections at night. December 15th, the field was very much improved. December 22nd, R. V. = $\frac{3}{200}$. Pilocarpine abandoned. December 28th, operation, scleral puncture, under cocaine, patient placed again in bed. December 30th, under ophthalmoscopic examinations, less detachment, dark mass at site of puncture, and on January 1st, the site of puncture appears pigmented. January 4, 1893, R. V. = $\frac{1}{200}$, and the patient was discharged.

CASE 13. W. T——, male, single, aged 24, Irish, car cleaner, came into the Hospital October 6, 1892, with detachment of the right retina.

History.—Patient states that he has always been near-sighted, and that seven weeks before entering the Hospital he noticed a "hair-like" object in the way of his sight, when, upon the following day, he became aware of a general dimness, increasing during the next day and persisting thereafter. He observed that he could best distinguish objects situated in the peripheral part of the field.

Condition.—R. V. = Perception of objects, doubtfully, but not centrally. L. V. = unknown. Ophthalmoscope: large detachment below involving macular region. Projection uncertain.

Treatment.—Operative. Sclero-retinal puncture, evacuating subretinal fluid. The patient was placed in bed, with bandaged eyes, and on October 15th, it was found that the retina had reattached to a considerable extent. The patient declining further treatment, was discharged.

CASE 14. F. J——, male, widower, aged 48, Irish, butcher, was taken into the Hospital on June 5, 1893, with detachment in left eye.

History.—A week since, he discovered an inability to see with his left eye, and stated that he was certain the sight was unimpaired in this eye before this period.

Condition.—R. V. = normal. L. V. = fingers at three inches. The ophthalmoscope revealed emmetropia in the right, and complete detachment of the retina, except far above, in the other eye. Field could not be taken.

Treatment.—Mechanical, medicinal, operative. The patient was placed in bed in dorsicumbent posture, with eyes bandaged. Hypodermic injections of pilocarpine in small and increasing doses were administered. On June 14th, the patient having exhibited no change, a sclero-retinal puncture was done, evacuating a considerable quantity of subretinal fluid, and some vitreous of fluid character. The eye was atropinized, bandaged and the patient once more placed in bed. The vision on June 16th was discovered to be finger-counting, on the temporal side, at four inches, and the patient was discharged.

CASE 15. H. B —, male, aged 60, married, Irish, engineer, reported at the Hospital on June 17, 1891, with detachment in right eye.

History.—In 1859, while at work, received a blow from a rebounding chisel on his right eye. After the wounds to surrounding parts had healed, he found no defect in his vision until a month later when after a quick movement of his head backward, he became suddenly aware of loss of vision in upper half of the field. He repaired the following day to an ophthalmic institution, where he was advised to do nothing, since which time there has been a gradual failure of vision until about twelve years ago, when sight failed him altogether in the afflicted eye. For several years the patient went about, consulting various prominent ophthalmologists, without receiving encouragement, and finally was admitted at this Hospital.

Condition.—Right eye, cornea clear, pupil evenly dilated and fixed; lens transparent, V. = P. L. The ophthalmoscope showed large detachment in two folds at the bottom of the fundus, best seen with + 4.00 D. to + 8.00 D. S., while the disc and upper regions were distinctly visible though the aperture. The left eye presented corneal opacities, irregular pupil, dislocated lens, and vision nil. Projection of right eye limited to small place in inferior region.

Treatment.—Operation, sclero-retinal puncture, evacuating a considerable quantity of subretinal fluid. Atropine and bandage were applied and the patient directed to assume a sitting posture as much as possible, and to sleep with his head well propped up. Pilocarpine injections were added to

the treatment. On the 26th the vision was found to be $\frac{20}{80}$. Later this fell to $\frac{11}{80}$, July 13th, when the patient was discharged.

CASE 16. J. C——, male, single, aged 30, American, farmer, came to the Hospital on February 15, 1893, with detachment in left eye.

History.—On the 12th of July, 1890, he discovered that he could not distinguish objects clearly, and on October 1st of the same year, was admitted to the Hospital, at which time his vision, which was reduced to perception of light, was restored to $\frac{20}{80}$, accompanied by a normal field, as the result of a sclero-retinal puncture. (An account of this may be found in the *New York Medical Journal*, March 21, 1891, article on Detachment of the Retina, by Dr. Webster.) He returns with a recent re-detachment in the same left eye.

Condition.—R. V. = $\frac{20}{80}$; Left V. = Distinguishes objects doubtfully. Ophthalmoscope shows a detachment below. The projection doubtful except below.

Treatment.—Dorsicumbency and bandage and pilocarpine injections, with the idea of a second operation in mind. The patient steadily improved, and on February 29th, the retina was found to be reattached, field normal and vision fully $\frac{20}{80}$, on which he was discharged—again cured after a period of more than two years before relapse.

CRITICAL NOTES. Of these cases there are; Males 12, females 4; single 10, married 6; ages 11 to 65, average age being 39; Irish 7, American 6, others 3; occupations varying from the mechanical or laboring class to the highly intellectual. The non-improved cases number 9; the improved, including one case cured, 7; the eye more often affected being the right. (Rt. 11, lft. 8.)

Among those upon whom no operation was performed were unimproved 6, improved 4; while of the cases upon which operation was performed, three were not improved, while three were improved, including one case cured. No case was rendered worse by treatment or operation.

The number of cases attributable to traumatism was three, all of which did well; to myopia, three, none of which derived any great benefit. Ten cases are assignable to no definite

origin, but of these Case 16 was cured twice, once by operation, and once by pilocarpine, etc.

The site of detachment was usually below, confirming the gravity theory of detachment by sub-retinal effusions.

Relapses occurred most frequently in old cases, and successes were most frequent in cases due to traumatism or of recent occurrence.

The use of the hypodermic needle was not attended with success in removing fluids, the greater aperture from twisting the knife in the scleral wound appearing to be essential to successful withdrawal of the exudation. The general conclusion to be drawn from an analysis of these cases appears to be, in my opinion, that operative measures are attended with results superior to any purely mechanical or medicinal treatment.

ASTHENOPIA DUE TO PRESSURE BETWEEN THE TURBINATED BONES AND THE SEPTUM NASI.

MATTHIAS L. FOSTER, M. D.

THE following case seems to me to be worthy of record, because it calls attention to a class of cases in which pain referred to the eye, is due directly to pressure on nerve-filaments in the nose. When she presented herself at the clinic, she showed no symptoms which attracted attention to the nose, she had no idea that there was any trouble there, and a search was instituted rather as a method of exclusion than with an idea of serious trouble being present. One of the most striking statements she made, seemed to me to be that during the operations on her nose she felt no pain at the site of operation, but suffered acute pain in the eye. The lesson this case teaches, is the importance of a careful examination of the nasal cavity and of the accessory sinuses in cases of obstinate asthenopia, for years of careful attention to the eye would certainly have failed to relieve this patient's suffering.

Mrs. B——, aged 31, by occupation a seamstress, appeared in Dr. Pomeroy's clinic, January 6th, 1893. She complained of headache, and of severe pain in the eyes, more particularly in the right, both greatly aggravated by any attempt to sew or read. There was no pathological condition in either eye except some chronic conjunctivitis. At the time she was wearing glasses, O. D. + 1 D. cyl. ax 90° O. S. + 1 D. sph. which had been prescribed for her elsewhere some months before.

Examination with the ophthalmometer showed, O. D. + 1.50 D. ax 100° or 10° with rule, O. S. + 1.50 D. ax 90° or 180° with rule. With the test lenses, O. D. $\frac{2.0}{\times \times \times}$ -; $\frac{2.0}{\times \times}$ - with + 1 D. cyl. ax 100°, O. S. $\frac{2.0}{\times \times \times}$ -; $\frac{2.0}{\times \times}$ - with + .75 D. cyl. ax 90°. There was binocular single vision for distance and for the near point. Examination of the muscles showed orthophoria, adduction 10°, abduction 8°, sursumduction 4°. Glasses were according prescribed, O. D. + 1 D. cyl. ax 100, O. S. + .75 D. ax 90, and a lotion of the saturated solution of boric acid for the conjunctivitis.

A week later she reported no improvement. Re-examination gave the same result. The conjunctivitis was then treated for six weeks with no benefit.

In March, the patient was referred to Dr. O. B. Douglas, to determine whether any nasal trouble could account for the maintenance of the asthenopia. Under cocaine, marked contact was found between the right middle turbinated bone and the septum nasi. The turbinated bone was found to be eburnated, and several operations were necessary to relieve the contact by removing portions of the bone with the alligator cutting forceps. During these operations the pain was felt entirely in the right eye. After the first operation, the pain in the eye was very much better but later it returned.

On April 29th, ten days after Dr. Douglas' last operation, the patient was transferred to the care of Dr. T. J. Harris to whom I am indebted for very full notes. On this day there was a contact between the right inferior turbinated and the septum, as well as a synechia between the anterior end of the middle turbinated and the septum. The latter showed some granulation tissue and behind it was retained secretion. The contact was relieved under cocaine and a pledget of acetotartaric acid of alum was introduced. On the following day there was only a little contact.

May 2nd. No contact. Mono-chloroacetic acid applied to granulation tissue.

May 3rd. Headache same as before any operation. Synechia had again formed and were treated.

May 18th. Eye gives but little trouble. No synechia. Two spots quite close above and below. Removed a small piece below.

May 20th. Removed a large portion of right inferior turbinated with snare. Eyes much better.

May 22nd. Eyes give but little trouble.

June 1st. Absolute freedom from all trouble in use of eyes by sewing. The right side of nose is now perfectly open.

July 7th. I again examined her eyes. There had been no sick headache since the last operation healed, but the right had felt a little strained for the past week when at work. Under homatropine, I found O. D. $\frac{2.0}{L} : \frac{2.0}{X} + w + .75$ D. sph. $\odot + 1$ D. cyl. ax 100° O. S. $\frac{2.0}{L} : \frac{2.0}{X} - w + .75$ D. sph. $\odot + .75$ D. cyl. ax 90° , and prescribed glasses accordingly. The patient has not since been seen.

REPORT OF THE PURULENT OPHTHALMIA CASES FOR THE PAST YEAR. THEIR TREATMENT AND RESULTS.

A. EDWARD DAVIS, A. M., M. D.

In reporting these cases each one is given first briefly in detail then the whole number, twenty-two in all, are recapitulated, thus enabling the reader to see at a glance what has been done for them and the results.

Six of the cases were ophthalmia neonatorum, while the remaining, sixteen, occurred in children and adults, ages ranging from three to forty years.

CASE 1. [Webster's clinic.] Mary G—, aged 28, admitted November 18, 1892.

Diagnosis.—Purulent ophthalmia both.

History.—Both eyes began to feel sore and itchy two days ago; thought she had a cold in them. On the second day—this morning—pus began to flow from them, the lids swelling in the meantime. Claims to have contracted the disease from washing towels from a doctor's office. (The doctor in his note to the Hospital says she is his washerwoman.)

Condition.—The lids of both eyes are swollen and stiff, marked chemosis of the ocular conjunctiva, profuse discharge of thick pus, corneæ clear, great pain and photophobia.

Treatment.—Bichloride solution ($\frac{1}{10000}$) to cleanse the eyes with every fifteen to thirty minutes; vaseline between lids after cleansing; silver nitrate (10 grs. $\frac{3}{4}$ i sol.) applied to the conjunctiva of the lids twice a day, but neutralized immediately by solution of salt water; iced cloths continuously. November 13th. Discharge less. Silver reduced to 5 grs. $\frac{3}{4}$ i sol.; treatment otherwise the same. November 14th. Continued improvement; treatment the same. November 16th. Iced cloths stopped; one drop of (2 grs. $\frac{3}{4}$ i sol.) atropine instilled. November 18th. Silver solution stopped; glycerole tannin (40 grs. $\frac{3}{4}$ i) to be used once a day. November 23rd. Discharged cured. V. R. $\frac{2}{80}$. V. L. $\frac{2}{80}$.

CASE 2. [Webster's clinic.] Joseph B—, aged 29, admitted November 22, 1892.

Diagnosis.—Gonorrhœal ophthalmia both.

History.—He is now suffering from an attack of gonorrhœa. His right eye has been sore for five days and the left for three days.

Condition.—Typical picture of gonorrhœal ophthalmia: lids so swollen that they can be opened with difficulty by the surgeon, great chemosis of the ocular conjunctiva, profuse discharge of thick yellow pus, which runs on to the cheeks, great pain, corneæ clear.

Treatment.—Cleansing with bichloride (sol. $\frac{1}{5000}$) p. r. n., peroxide hydrogen (Volume 15 per cent.) dropped into the eye frequently to assist in cleaning it; silver nitrate (sol. 10 grs. $\frac{3}{4}$ i) to the lids t. i. d, neutralized immediately. November 29th. Up to date the eyes have remained nearly as they were when patient was admitted, secretion a little less, but chemosis more if anything, the lower part of limbus of each cornea a little hazy. Eserine (1 gr. $\frac{3}{4}$ i sol.) three times a day. November 20th. No improvement, treatment the same. December 2nd. Intermit iced cloths, eserine once a day. December 3rd. Some improvement. Iced cloths three hours a day. December 4th. Secretion much less, corneæ clearer; silver discontinued. December 12th. Gradual improvement from this date on, no perforation occurring. Discharged January 20, 1893, with R. V. $\frac{20}{20}$. L. V. $\frac{20}{20}$.

CASE 3. [Webster's clinic, under Dr. Giles' care.] Mary G—, aged 21, admitted December 23, 1892.

Diagnosis.—Purulent ophthalmia right eye.

History.—Three weeks ago the eye became red and painful and began to discharge slightly. Did nothing to it for day or two, but finally, on account of the great pain, put on a bread and milk poultice.

Condition.—Great swelling of the lids, marked discharge of pus, central perforation of the cornea with prolapse of the iris, considerable chemosis of the ocular conjunctiva.

Treatment.—Bichloride solution ($\frac{1}{5000}$) to cleanse eye with, iced cloths. Buller's shield for opposite eye. December 29th. Secretion much less, swelling not so great. January 2nd. Silver (20 grs. $\frac{3}{4}$ i sol.) to be applied to the lids b. i. d. No hope of any vision. January 5th. Bandage applied, eye to be cleansed twice a day. January 9th. Anterior staphyloma excised. Eye cleansed with Panas' fluid first. January 12th. Eye doing well, very slight discharge. January 28th. Discharged with the stump healed. V. = 0.

CASE 4. [Webster's clinic, under F. W. Ring's care.] W. G——, aged two weeks, admitted February 10, 1893.

Diagnosis.—Ophthalmia neonatorum both eyes.

History.—The left eye was affected the second day after birth, the right three days later.

Condition.—Lids swollen, marked chemosis of ocular conjunctiva, very free discharge of yellow pus from the eyes, the left cornea has a large leucoma.

Treatment.—Bichloride mercury solution ($\frac{1}{10000}$) to cleanse the eyes with p. r. n., vaseline between the lids after cleansing, silver nitrate solution (10 grs. $\frac{3}{4}$ i) applied to the lids b. i. d. February 11th. Eyes improved, the left very much so, the secretion from it lessened perceptibly. Silver solution (5 grs. $\frac{3}{4}$ i) b. i. d., to the right lids, but discontinued in the left. February 15th. Silver solution (5 grs. $\frac{3}{4}$ i) u. i. d. to each eye. The left eye continues to have less discharge; the right is not doing as well; iced cloths ordered for both. February 17th. Silver solution (20 grs. $\frac{3}{4}$ i) to right lids; peroxide hydrogen (15 volume) dropped into the eyes five times today. February 19th. Infiltration of whole right cornea. One drop of (2 grs. $\frac{3}{4}$ i) atropine, one drop of listerine (two thirds strength) every three hours, peroxide hydrogen every two hours. The secretion from the left eye about stopped. February 20th. No improvement in right. One drop of glycerole of tannin (20 grs. $\frac{3}{4}$ i sol.) rubbed on the lids every three hours and washed off with a saturated solution of boracic acid. February 23rd. Right cornea perforated. Peroxide hydrogen discontinued. Glycerole tannin (20 grs. $\frac{3}{4}$ sol.) b. i. d., to lids February 25th. Eye quiet, nothing but cleansing. March 1st. Discharged with opacity right cornea and leucoma left R. V. = $\frac{2}{3}$. L. V. = Perception of light.

CASE 5. [Webster's clinic, under Dr. F. W. Ring's care.] J. P. H——, aged 5 years, admitted January 30, 1893.

Diagnosis. Purulent conjunctivitis left eye.

History. The child's left eye has been sore for seventeen days. Has had nothing done for it except keeping it clean.

Condition. Both upper and lower lid swollen and red, chemosis of ocular conjunctiva; free discharge of pus, cornea hazy in its entire extent, pain and photophobia.

Treatment. Bichloride mercury solution ($\frac{1}{10000}$) p. r. n., for cleansing, peroxide of hydrogen used to cleanse the eye every hour, eserine sulph (sol. 1 gr. $\frac{3}{4}$ i) dropped into the eye twice a day, silver nitrate (sol. 10 grs. $\frac{3}{4}$ i) to the lids b. i. d., bichloride vaseline ($\frac{1}{5000}$) between the lids after cleans-

ing. January 31st. Treatment the same except the vaseline. February 1st. No silver or peroxide of hydrogen today. February 2nd. Silver (sol. 5 grs. $\frac{3}{4}$ i) b. i. d. neutralized. February 3rd. One drop of eserine. Eye improving, secretion less. February 5th. Lids bleed easily when cleansed, silver stopped, eserine one drop a day. February 8. One drop of atropine (2 grs. $\frac{3}{4}$ i), Agnew spray-solution once a day. February 10th. Secretion about gone, bichloride (sol. $\frac{1}{1000}$) and Agnew spray-solution the only medicine used. February 16th. Discharged. Slight opacity of the cornea.

CASE 6. [Webster's clinic, under Dr. F. W. Ring's care.]

A. C——, aged two weeks, admitted February 17, 1893.

Diagnosis.—Ophthalmia neonatorum both eyes.

History.—Both eyes have been sore since the second or third day after birth. Nothing done for them.

Condition.—Lids of both eyes swollen, but not markedly so, only a moderate amount of secretion and this rather thin, slight chemosis of conjunctiva, right cornea clear, left cornea leucoma adherens.

Treatment.—Bichloride mercury (sol. $\frac{1}{1000}$) to keep the eyes clean, and silver nitrate (sol. 10 grs. $\frac{3}{4}$ i) applied to the lids u. i. d. February 20th. No secretion from right and but little from the left eye. February 22nd. Discharged with the right cornea clear, the left with leucoma as when it entered.

CASE 7. [Webster's clinic, under Dr. F. W. Ring's care.]

D. S——, aged 37, admitted June 21, 1893.

Diagnosis.—Purulent ophthalmia left eye.

History.—His left eye has been sore for two weeks with the lids swollen and with pus running from the eye. Has done little or nothing for it.

Condition.—Both upper and lower lid swollen, chemosis of the ocular conjunctiva, moderate amount of pus present, cornea hazy.

Treatment.—Saturated solution of boracic acid to keep the eye clean, vaseline between lids after cleansing, iced cloths continuously, Buller's shield on the right eye. June 22nd. Iced cloths discontinued, instead of boracic acid solution use alum wash ($\frac{3}{4}$ i to the pint). June 23rd. Alum wash discontinued, bichloride mercury solution ($\frac{1}{1000}$), silver nitrate (10 grs. $\frac{3}{4}$ i) u. i. d. June 25th. Discharged cured. V. R. $\frac{20}{20}$. L. $\frac{20}{20}$.

CASE 8. [Webster's clinic, under Dr. Carey's care.] M. K—, aged 40, admitted July 1, 1893.

Diagnosis.—Purulent ophthalmia right.

History.—This patient has a history of old Trachoma. Two days ago wiped his eye on a handkerchief that had some pus on it, two days later his right eye began to pain him and to discharge pus.

Condition.—The eyelids are greatly swollen, can't open them, chemosis of ocular conjunctiva so great that it overlaps the cornea at limbus, free discharge of thick pus, severe pain, the cornea is clear.

Treatment.—Eye kept clean every twenty minutes with saturated solution of boracic acid, iced cloths, atropine (2 grs. $\frac{3}{4}$ i) one drop t. i. d, Buller's shield to left eye. July 2nd. No improvement, cornea cloudy, great pain. Treatment continued with silver nitrate (10 grs. $\frac{3}{4}$ i) u. i. d. to lids in addition. July 4th. Ulcer on the cornea, canthotomy, treatment the same otherwise. July 7th. Cornea sloughed. July 8th. Lachrymal abscess on left side, this was opened today. January 11th. Iced cloths stopped, the secretion from eye much less. July 17th. Discharged R. V. = Pl. L. V. = $\frac{2}{3}$.

CASE 9. [Roosa's and Lewis' clinic.] F. K—, aged 12, admitted December 4, 1892.

Diagnosis.—Purulent ophthalmia right.

History.—Six days ago the right eye became inflamed and painful. Applied a bread and milk poultice for half hour, then a doctor saw him and advised iced cloths and "eye drops."

Condition.—The lids are greatly swollen, profuse discharge of pus, marked chemosis of ocular conjunctiva, perforation of the cornea.

Treatment.—Saturated solution of boracic acid to keep the eye clean with, vaseline between the lids after cleansing, iced cloths, Buller's shield to the left eye. December 6th. In addition to other treatment, glycerole of tannin (40 grs. $\frac{3}{4}$ i) applied to the lids twice a day. December 7th. Iced cloths discontinued. December 17th. The eye but little improved. glycerole of tannin stopped for 24 hours, no hope of any useful vision. December 26th. Still some secretion from the eye, glycerole of tannin stopped altogether, silver nitrate (10 grs. $\frac{3}{4}$ i) applied to the lids b. i. d. January 11th. Discharged V. R. = Pl. V. L. = $\frac{2}{3}$.

CASE 10. [Roosa's and Lewis' clinic.] M. E——, aged 4, admitted February 7, 1893.

Diagnosis.—Purulent ophthalmia left eye.

History.—Three days ago the left eye got sore and rapidly grew worse. Family physician prescribed for child. He thinks the child contracted the disease from the mother, as she has a vaginitis. Was sent to the New York Eye and Ear Infirmary and was referred to this Hospital from there.

Condition.—A typical aggravated case of purulent ophthalmia, cornea clear.

Treatment.—Saturated solution of boracic acid as a cleanser, iced cloths, vaseline, silver nitrate (10 grs. $\frac{3}{4}$ i) applied to the lids once a day. February 8th. Silver discontinued as it made the lids bleed. Eye improving, less secretion and less swelling of the lids, cornea clear. February 10th. Silver nitrate (5 grs. $\frac{3}{4}$ i) to the lids once a day. Continued improvement. February 17th. Discharged cured, cornea clear.

CASE 11. [Roosa's and Lewis' clinic.] J. B——, aged 21, admitted July 18, 1893.

Diagnosis.—Purulent ophthalmia left eye.

History.—His left eye has been sore for two days. Has had nothing done for it.

Condition.—Lids greatly swollen, very marked chemosis of ocular conjunctiva which overlaps the margin of the cornea, profuse discharge of thick pus, great pain, cornea clear.

Treatment.—Boracic acid solution every ten minutes to keep eyes clean, iced cloths continuously, atropine (2 grs. $\frac{3}{4}$ i) twice a day, silver nitrate (10 grs. $\frac{3}{4}$ i) applied to the lids twice daily. July 18th. No improvement, cornea cloudy. July 22nd. Cornea perforated. July 24th. No improvement; three leeches to the left temple in addition to the other treatment. July 30th. There is not so much secretion, iced cloths stopped. August 2nd. Silver discontinued. August 4th. Iced cloths used fifteen minutes in every two hours. August 10th. Secretion much less; simply cleansing. August 17th. Discharged. V. L. = 0.

CASE 12. [Roosa's and Lewis' clinic under Dr. Davis' care.] B. B——, aged 28, admitted August 29, 1893.

Diagnosis. Purulent conjunctivitis right orbit.

History.—She had her right eye enucleated three years ago. Had been blind in it for seven years previous to its enucleation, "from a cold in it." Has worn an artificial eye

since, changing it yearly. The present one she has worn for something more than a year. The orbit began to discharge pus a week ago.

Condition.—Lids are red and swollen, free discharge of pus, conjunctiva velvety and covered with granulations, pain and burning sensation in orbit. Left eye not affected.

Treatment.—Buller's shield to left eye. Shell removed from the right orbit, saturated solution of boracic acid for cleansing, bichloride mercury solution ($\frac{1}{1000}$) three times a day, silver nitrate (20 grs. $\frac{3}{4}$ i) applied to whole conjunctiva once a day, iced cloths. At the end of seven days under this treatment the orbit was quiet, but some discharge continued. The left eye unaffected. Patient was informed she could go home in two days and come as an out-door patient. During the night she infected the left eye, and deliberately, for she protested loudly on being told the day previous she must go home, and said she wanted to stay two weeks longer. September 8th. Two days after infection, considerable discharge, redness, swelling of the lids, pain. Treatment, same as for the orbit, except the silver solution, this was (10 grs. $\frac{3}{4}$ i) u. i. d. September 12th. Eye much better. Treatment the same. September 13th. Discharged to come as out-door patient, but she goes under protest. V. L. = $\frac{3}{8}$.

CASE 13. [Roosa's and Lewis' clinic, under Dr. Davis' care.] J. D.—, aged seven, admitted September 11, 1893.

Diagnosis.—Purulent ophthalmia right eye.

History.—Her right eye has been sore for two weeks. Her father is a physician, but says he cannot account for the condition of his child's eye. The eye was at first red and painful, then lids "swelled shut," and pus began to flow from the eye. The father instilled atropine, applied *luna caustic* to the lids and tried to keep lids clean.

Condition.—Two weeks now since the eyes were first sore. Lids are swollen but movable, great chemosis of ocular conjunctiva, free discharge of pus, ulcer on the cornea just below the center, great pain.

Treatment.—Saturated solution of boracic acid to keep eyes clean with, bichloride mercury solution ($\frac{1}{1000}$) sprayed in the eye twice a day, vaseline between the lids after cleansing, iced cloths, atropine (2 grs. $\frac{3}{4}$ i) t. i. d., Buller's shield to left eye. September 13th. The eye has done nicely the ulcer not extending. Treatment the same, except hot water used instead of cold. September 15th. Eye better; in addition to other treatment, silver nitrate (10 grs $\frac{3}{4}$ i) applied to

the lids once a day. September 17th. Secretion much less, ulcer healing, chemosis disappearing. Treatment the same. September 19. Intermit hot water, atropine once a day. September 21. The ulcer is about healed, secretion very little, eye getting white, atropine stopped, hot water fifteen minutes every two hours. September 26. Discharged well, opacity on right cornea. R. V. = $\frac{3}{8}$ L. V. = $\frac{3}{8}$.

CASE 14. [Roosa's and Lewis' clinic.] A. S——, aged one month, admitted September 16, 1893.

Diagnosis.—Ophthalmia neonatorum and anterior staphyloma right eye.

History.—The baby's eye has been sore since a few days after birth. Has been sick all the time and for last week has vomited its milk after nursing.

Condition.—Large staphyloma of the cornea of the right eye, considerable discharge of pus, palpebral conjunctiva thickened and velvety in appearance. Child is in a state of inanition. Died on second day after admission.

CASE 15. [Emerson's clinic, under Dr. Reyling's care.] E. H——, aged 23, admitted March 1, 1893.

Diagnosis.—Purulent ophthalmia right eye.

History.—The eye has been sore but one day; does not know how she infected the eye.

Condition.—Typical case: lids greatly swollen, ocular conjunctiva chemotic, profuse discharge of thick, yellow pus, intense pain, the lower temporal quadrant of the cornea infiltrated.

Treatment.—Saturated solution boracic acid every twenty minutes to keep the eyes clean, vaseline between lids after cleansing, atropine (2 grs $\frac{3}{4}$ i) twice a day, iced cloths, Buller's shield to left eye. March 5th. Infiltration of the cornea extending and a small ulcer formed, vaseline gives pain when applied, sweet oil ordered in place of it. Treatment the same otherwise. March 6th. Cornea perforated, membrane formed on the lids. March 8th. Secretion not so profuse, but membrane remains on lids. Tonics in addition to other treatment. March 15th. Cornea and iris matted together with adhesions, secretion almost stopped and watery in character. Silver (10 grs. $\frac{3}{4}$ i) applied to the lids twice daily. March 28. Sulph. copper in place of silver, cleansing and iced cloths not to be used so frequently. April 11th. Discharged. R. V. = Pl. L. V. $\frac{1}{8}$.

CASE 16. [Emerson's clinic.] B. T—, aged two weeks, admitted May 20, 1893.

Diagnosis.—Ophthalmia neonatorum both eyes.

History.—The left eye has been sore since a few days after birth, the right a few days later. Practically nothing done for the eyes of infant up to this time.

Condition.—Discharge of pus from both eyes, lids swollen, chemosis of conjunctiva slight, left cornea opaque, right clear.

Treatment.—Saturated solution boracic acid to keep eyes clean, vaseline between the lids, iced cloths. May 25th. Discharge much less. Treatment same. June 1st. Patient discharged. Right cornea clear, left cornea opaque.

CASE 17. [Emerson's clinic, under Dr. Weisner's care.] A. M—, aged ten days, admitted June 22, 1893.

Diagnosis.—Ophthalmia neonatorum both eyes.

History.—Both eyes sore since birth. Has had nothing but cleansing.

Condition.—The lids of both eyes are very much swollen, marked discharge of pus from both eyes, both corneæ clear.

Treatment.—Bichloride of mercury solution ($\frac{1}{10000}$) for cleansing the eyes, bichloride vaseline ($\frac{1}{5000}$) between the lids, atropine (1 gr. $\frac{3}{4}$) t. i. d., iced cloths. June 25th. Eyes doing well. Silver nitrate (10 grs. $\frac{3}{4}$) twice a day in addition to the other treatment. July 4th. Continued improvement. Treatment the same. July 8th. Discharged cured. Both corneæ clear.

CASE 18. [Emerson's clinic.] J. M—, aged 18, admitted June 8, 1893.

Diagnosis.—Gonorrhœal ophthalmia right eye.

History.—He has an acute case of gonorrhœa. His right eye showed symptoms of inflammation for the first time yesterday.

Condition.—Eyelids swollen, conjunctiva injected, free discharge of yellow pus from the eyes, great pain, cornea clear.

Treatment.—Bichloride of mercury solution ($\frac{1}{10000}$) to cleanse the eye with, bichloride vaseline ($\frac{1}{5000}$) between the lids, iced cloths, silver nitrate (10 grs. $\frac{3}{4}$) applied to the lids u. i. d., and neutralized, Buller's shield to the left eye. June 12. But little, if any, improvement. Treatment the same. June 15th. Cornea infiltrated above, chemosis marked, dis-

charge profuse. June 20. Ulcer of the cornea at upper margin. Treatment the same. June 22. Ulcer perforated, atropine (2 grs. $\frac{3}{4}$) twice a day in addition to the other treatment. June 26th. Discharge from the eye much less. June 30th. Silver discontinued. July 1st. Compresses of cotton saturated with solution of bichloride of mercury ($\frac{1}{10000}$) applied to the lids, to be changed every two hours. July 8th. Patient discharged. R. V. = $\frac{2}{0}$. L. V. = $\frac{2}{0}$.

CASE 19. [Emerson's clinic, under Dr. Weisner's care.] H. B—, aged 35, admitted June 25, 1893.

Diagnosis.—Gonorrhœal ophthalmia left eye.

History.—Has had gonorrhœa for last six weeks. His left eye has been sore and painful for the last four days, no treatment so far. Has always been near sighted.

Condition.—Great swelling of the lids, chemosis of the ocular conjunctiva pronounced, profuse discharge of thick creamy pus, cornea clear, intense pain.

Treatment.—Bichloride mercury solution ($\frac{1}{10000}$) to keep eyes clean, bichloride vaseline ($\frac{1}{5000}$) between the lids, iced cloths, silver nitrate (10 grs. $\frac{3}{4}$) once a day to the lids, Buller's shield to the right eye. June 27th. Eye improving, discharge less, chemosis not so marked, iced cloths alternate hours, other treatment unchanged. July 2nd. Continued improvement. Treatment the same. July 8th. Discharge nearly stopped, chemosis almost gone. Treatment the same. July 11th. Patient discharged cured. R. V. = $\frac{2}{0}$. L. V. = $\frac{2}{0}$. Patient is myopic.

CASE 20. [Pomeroy's clinic.] A. C. W—, aged 25, admitted December 21, 1893.

Diagnosis.—Gonorrhœal ophthalmia both eyes.

History.—His left eye became red and painful and began to discharge pus two weeks ago. He was suffering with gonorrhœa at the time. Had a physician to treat his eye, but it went from bad to worse, and he lost the sight. His right eye began to pain him yesterday.

Condition.—The lids of right eye are very much swollen, chemosis of ocular conjunctiva, free discharge of yellow pus from the eye, cornea clear but there is a lachrymal abscess. The left eye is phthisical with no vision.

Treatment.—Bichloride of mercury solution ($\frac{1}{10000}$) to keep eye clean every fifteen minutes, vaseline between the lids after cleansing, iced cloths. December 22nd. Sulphate

eserine (1 gr. $\frac{3}{4}$) once a day, silver nitrate (10 grs. $\frac{3}{4}$) to be applied to the lids once a day. December 25th. Lachrymal abscess opened today, the eye remains about as it was when he entered. Hot water in place of iced cloths. Other treatment unchanged. December 29th. Small ulcer on lower part of the cornea, the discharge somewhat less. January 4, 1893. The ulcer remains about the same size, discharge less and lids looking better. Hot water and silver stopped, bichloride vaseline ($\frac{1}{1000}$), iced cloths again. January 15th. Ulcer healing. Alum wash ($\frac{3}{4}$ to pint water) t. i. d. January 31st. Ulcer healed, but a slight discharge remains. February 11th. Discharged. R. V. = $\frac{2}{6}$. L. V. = 0 as when he entered.

CASE 21. [Pomeroy's clinic.] A. E——, aged nine days, admitted June 23, 1893.

Diagnosis.—Ophthalmia neonatorum both eyes.

History.—The child's eyes have been sore since a few days after birth. Mother has tried to keep the eyes clean.

Condition.—Both the upper and the lower lids swollen and red, conjunctiva in each eye thickened and, on the lids, velvety in appearance, corneæ clear, moderate discharge of pus from each eye.

Treatment.—Cleansing every thirty minutes with bichloride of mercury solution ($\frac{1}{1000}$), iced cloths. June 27th. Discharge from the eyes much less. June 28th. Atropine (1 gr. $\frac{3}{4}$) instilled into the eyes. July 1st. Both eyes much improved, discharge from them all but gone. Alum stick to the lids once a day. July 8th. Discharged cured, both corneæ clear.

CASE 22. [Pomeroy's clinic.] P. B——, aged five years, admitted August 4, 1893.

Diagnosis.—Purulent ophthalmia both eyes.

History.—The mother does not know how he contracted the disease. Both eyes have been sore for last three or four days. Has had nothing done for them.

Condition.—Moderate amount of swelling of the lids, injection of the conjunctiva, free discharge of thick, yellow pus from the eyes, corneæ clear.

Treatment.—Solution of bichloride of mercury $\frac{1}{1000}$, vaseline between the lids after cleansing, iced cloths. August 8th. The eyes have improved, discharge from them less, swelling

less. August 12th. Continued improvement. August 17th. But very slight discharge, corneæ clear. Discharged patient from the Hospital.

RECAPITULATION. It will be noticed by those who have read the twenty-two cases in detail that ten of them had both eyes affected, five among the ophthalmia neonatorum cases and five among the purulent cases, making thirty-one eyes affected in the twenty-two cases (one of these cases, it should be remembered, was a purulent inflammation of an empty orbit.) Twenty of the thirty-one eyes when they entered the Hospital had clear corneæ. Thirteen of these twenty eyes were purulent cases (in children and adults), and seven were ophthalmia neonatorum cases. Out of the thirteen purulent cases, eleven (84.61 per cent.) were discharged with useful vision, to wit, $\frac{20}{20}$; $\frac{20}{20}$; $\frac{20}{20}$; $\frac{20}{20}$; clear cornea (aged 5, too young to test); $\frac{20}{70}$; $\frac{20}{20}$; $\frac{20}{20}$; $\frac{20}{70}$; clear cornea. Two were lost. One had preception of light, the other 0; Of the seven ophthalmia neonatorum eyes that entered with clear corneæ, six (85.71 per cent.) were discharged with clear corneæ, and one (14.29 per cent.) was lost. Combining the eleven eyes in adults discharged with useful vision, and the six in infants with clear corneæ, makes a total of seventeen out of the twenty eyes that entered with clear corneæ that were saved, or 85 per cent. Not a bad showing. Of the two cases in adults that entered with infiltrated corneæ, one was saved with $\frac{20}{20}$ vision, while one was lost, vision perception of light. One case that entered with an ulcer of the cornea was saved, vision ($\frac{20}{70}$). The two that entered with perforation of the cornea and prolapse of iris were discharged, one with vision nil, and the other vision perception of light. The cases of ophthalmia neonatorum that entered with leucomatous corneæ were, of course, discharged in a similar condition, while one that entered with an infiltrated cornea was discharged with a small opacity but a good eye.

While the per cent. of successes and failures are given here, it is not intended to make these figures representative, for

there have not been enough cases to base them upon. For instance, of the seven ophthalmia neonatorum cases that entered with clear corneae one (14.29 per cent.) was lost. A very rare occurrence in ophthalmia neonatorum if seen in time and the cornea is clear when first seen. This is a very misleading conclusion, therefore, judging from these seven cases alone. As a matter of fact, perhaps not one per cent. of such cases are lost, that is, where they are seen in time—within twenty-four hours after infection. These figures and per cents. are given only to show the year's failures and successes at the Manhattan Eye and Ear Hospital, and are not meant to be representative of correct ratios of successes and failures in such cases. I would like to call attention to the two cases, numbers three and nine, who had applied poultices to their eyes before they entered the Hospital. Both lost their eyes. In a paper on this same subject of purulent ophthalmia, published in the *Medical Record* two years ago, I called attention to this destructive influence of poultices, a fact, however, well known to the profession, the oculist at least. But when will the oculist be able to teach the laity not to put poultices and tea leaves on their eyes? *Newspaper medicine* is responsible in a great measure for this popular error among the laity in regard to the good (?) effect of poultices and tea leaves as applications to the eyes. Only last winter, in an evening paper under a *doctor's* signature, poultices and tea leaves were highly recommended for inflammation of the eyes!

I would also again call attention to the good effect of hot water in those cases where the cornea is affected. In my opinion, as soon as the cornea becomes affected—infiltration, ulceration, etc.—hot water should be substituted for the cold cloths. There are a few cases, however, which complain of the hot water, here the iced cloths have to be resorted to again, although the cornea is affected. The iced cloths should be used at long intervals in such cases.

In all cases where but one eye was affected, the good eye was protected by a Buller's shield. Tonics and fluid nourishment were given in all cases where the patient was at all

debilitated or in a weakened condition. The general condition of the patient in these cases is too often neglected. A microscopic examination for the gonococcus was not made in all of the cases. Only those who were suffering with gonorrhoea were diagnosed as "gonorrhoeal ophthalmia," the remainder were designated as "purulent ophthalmia." So far as etiology is concerned this is to be regretted, but so far as treatment is concerned it is of but little importance, the treatment being practically the same in all purulent cases. Regardless of etiology, the great desideratum in treatment is *perfect* cleanliness, or as near to it as possible, with some bland, non-irritating solution—a saturated solution of boric acid being used most frequently. Peroxide Hydrogen (15 per cent. volume) is sometimes used to advantage, to assist in the cleansing. To control pain and inflammation, iced cloths are to be employed, and in the later stages, if the cornea is affected, hot water if tolerated.

As to germicides, personally, I like best a solution of silver nitrate (10 grs. $\frac{3}{4}$); next a solution of bichloride mercury ($\frac{1}{8000}$ to $\frac{1}{10000}$). Atropine and Eserine to be used only when complications arise to demand them. Canthotomy periotomy and grattage, which of late is highly commended, are measures to be employed as the surgeon sees fit and as occasion demands.

A UNIQUE CASE OF DACRYO-CYSTITIS WITH REMARKS ON THE PATHOLOGY OF THE DISEASE.

H. DAVISON SCHWARZSCHILD, M. D.

THE peculiar and interesting features involved in this case induce me to present the same to your attention.

George F. H——, aged 53, a laborer, related to me the history of an accident which befel him. On the 27th of February, 1893, while climbing a ladder with some pieces of iron, he lost balance, fell and struck his face against a steel cross-beam, a distance of twelve feet; then became unconscious and was removed to a hospital. He remained there several weeks to recover from the injuries received.

When I saw him first, April 18th, at the Manhattan Eye and Ear Hospital in the clinic of Dr. Webster, through whose courtesy the case came under my immediate observation, there was visible a marked deformity of the face. This was caused by a depressed fracture of the nasal bones, and a hyperostosis of the malars of both sides. In addition, there was a cellular swelling of the left side, extending from the middle of the superior maxilla, to the superciliary ridge of the frontal bone, causing a partial eclipse of the eye.

Over the site of the lachrymal bone, I felt a fluctuating mass, which differed from the other enlargement, in that this latter was tense and non-pulsating.

The patient denying ever having suffered from lachrymation before, the diagnosis was made of traumatic, purulent dacryo-cystitis with accompanying cellular infiltration.

I inserted a Weber's knife into the punctum lachrymale, slit up the inferior canaliculus, and then passed it the entire length of the nasal duct, incising a fibrous stricture en route. Upon its withdrawal about 3ii of pus mixed with blood escaped. Subsequent microscopical examination showed the presence in large numbers of the staphylococcus pyogenes aureus. The treatment consisted in the local application of cold compresses, and patient was directed to see me every day.

April 19 and 20. Marked improvement; swelling considerably reduced. Passed a No. 6 Bowman's probe.

April 21. The swelling has almost entirely disappeared, some mucus has accumulated at caruncle. Slight tenderness over orbital portion of superior maxilla and os lachrymale, none over antrum. Passed a No. 8 Bowman's, followed by Weber's conical probe.

This form of treatment, on alternate days, became routine practice for three weeks. At the expiration of this period the discharge ceased.

May 15. The first time I saw the patient, observed epiphora of the right eye, but as there was neither purulent secretion nor inflammatory swelling, decided to let it rest in abeyance until the left was brought under control.

I expressed some greenish white secretion, which proved to consist of the streptothrix of Fœrster, epithelial cells and non-pyogenetic cocci. Entered a No. 1 probe to the os-lachrymale, then tilted it, and carried the same about 6 mm. into the duct, when further advancement became impossible, the canal being obstructed by a hard mass. I then slit up the lower canaliculus with a Weber's knife and attempted to pass the stricture therewith, which did not prove to be feasible, as the obstruction could not be incised. It became evident, therefore, that an exostosis was the cause of the trouble; used the Anel syringe to determine whether any fenestrations existed but none were found. Not being aware of the existence of an instrument to remove osseous obstructions in this region. I devised a gouge* for the purpose. After chiseling a few times with it an opening was effected through the removal of a small bony button, which was withdrawn with a McKay forceps.

The cylindrical epithelium, which normally lines the nasal duct undoubtedly proliferated and covered the portion which had been cleared, as secretion was soon reduced to nil.

The lachrymal apparatus was left undisturbed for a week, the duct then being irrigated with warm boric acid solution, and afterwards probed to prevent adhesions.

June 10. The left nasal duct is clear and a No. 8 probe passes with facility. The right one admits a probe of the same size and is free from obstruction. The patient has been taught to pass a probe himself and does so twice a week; through this precaution a recurrence of the disease is not imminent.

A few words regarding the pathology of disease of the tear passages.

(1) INFLAMMATION.	{	¹ Dacryo-cystitis catarrhalis. (Blenorrhœa lachrymalis.)	{	¹ Sub-acute. ² Chronica.
		² Dacryo-cystitis purulenta. (Phlegmon.)		Acuta.
		³ Dacryo-cystitis tuberculosa.	{	

* Described in the Medical Record, November 25, 1898.

The first form mentioned represents a mucous membrane inflammation, which begins sub-acutely and gradually becomes chronic, the transition not being well marked. The glands early in the disease are hyper-active and produce mucus of an altered quality in increased quantity, the superficial cells desquamate more rapidly than normally and the deeper ones are produced in greater numbers. The white blood-cells emigrate in moderate numbers from the vessels; of these some infiltrate the connective tissue, others reach the surface and become mixed with the secretion and desquamated cells. The amount of pus present varies naturally with the degree of white cell emigration, sometimes there is none to be seen more often a small quantity, but rarely much. As the inflammation progresses the tissue changes become exaggerated, the epithelial layer often becomes irregular, thinned in some places, thickened in others, and the cells undergo various changes of deformation.

The mucous membrane may either be pale, or deeply congested.

In the former case the blood-vessels are small and contain a minimum quantity of blood. In the latter condition there is an increase in number of the same, which are distended, and engorged with blood.

The stroma may be thinned or thickened; when atrophied the tissues become rarified, sacculated and present the appearance of a serous membrane. In case of hypertrophy there is a diffuse thickening with the formation of strictures more or less dense. In cadavera it is occasionally observed that the lower part of the nasal duct has become converted into a fibrous cord. Should the hypertrophy be localized, polypi will result.

The secretion as in the sub-acute form is increased in quantity, etc., or it may be diminished, depending naturally upon the changes which the secretors have undergone.

The mucous glands may be {
¹atrophied.
²entirely obliterated.
³hypertrophied.
⁴dilated with the formation of
 cysts.

Should the localized thickening of the connective tissue, before mentioned, be combined with the hypertrophy of one or more glands, the polypoid mass will to a certain extent be glandular in character.

Dacryo-cystitis purulenta (phlegmon) always an acute process is occasioned by the entrance of pyogenetic cocci into the connective tissue surrounding the sac, having gained entrée through an epithelial denudation, be the cause thereof what it may.

This condition complicates purulent conjunctivitis, the exanthemata, and is sometimes caused by traumatism; but is usually an exacerbation of a sub-acute or chronic catarrhal inflammation of the sac and duct.

Its tendency is to form an abscess which runs the course of any deep seated one.

This form differs from the catarrhal, principally in the intensity of the inflammatory process and in the emigration in enormous quantities of the white blood-cells.

Tubercular inflammation is secondary to tuberculosis of the conjunctiva and lupus of the face, and consists in the deposit of tubercle granula in the sub-epithelial layers. This is followed by a round cell infiltration, and a catarrhal inflammation is then developed. Later the tubercles undergo cheesy degeneration and soften, the epithelium necroses, sloughs away and ulcers are formed.

(2) Neoplasms may occur in the sac or nasal duct.

(3) The osseous walls and bony adnexa are subject to the various lesions common to this form of tissue e. g. bone tumors, caries, necrosis, osteitis, and the various forms of periosteitis.

OTITIS MEDIA SUPPURATIVA CHRONICA. REMOVAL OF MALLEUS. INTERMITTENT FEVER, SIMULATING LOCALIZED MENINGITIS.

THOMAS J. HARRIS, M. D.

(With Four Illustrations.)

D. C—, aged 50, laborer, presented himself at the clinic April 7th, 1892, with the following history:

Twenty years ago he received a blow on the left side of his head, and since then has been deaf. Three years ago, pain and discharge set in, which has continued off and on since. At present severe pain and discharge for five days. Examination showed a large perforation in the anterior segment of MT. Under use of local applications, discharge ceased in a month.

During the fall and winter there were two relapses. In June he again returned with a history of discharge and deafness increasing. Watch heard on contact.

A careful examination was then made and necrosed bone detected. After due deliberation it was determined to remove the malleus. The patient was accordingly put under ether July 18th, 1893, and the malleus removed in a much necrosed condition and the cavity curetted. The operation lasted fifteen minutes after ether was induced. The malleus was easily found and removed without any undue force, the cavity curetted carefully, but in no way roughly, the ear cleansed with peroxide of hydrogen and the cavity packed with iodoform gauze.

The patient experienced no unpleasant effects from the operation, save some vertigo which had almost entirely disappeared twenty-four hours afterward. Temperature and pulse remained normal. There was a scanty serous discharge from ear. Patient was discharged on third day from Hospital with the following note, "There has been no reaction—no discharge from ear." He resumed his work the following week. Some ten days afterward he returned complaining of increasing vertigo and pain on the left side of the head and face. This steadily grew worse. On August 9th he had a temperature of 103, a severe chill and seemed so sick that he was ordered to re-enter Hospital.

His condition on admission August 10th, was as follows: a well nourished strongly built man,—complains of severe pain in frontal region, both sides, increased by movement—stomach rejects all solid food—no pain on percussion of skull—pupil, (one eye lost) normal, reacts well to light—disk, healthy—no convulsive movements—no paralysis—temperature, 101.8—pulse, 92—ear perfectly free from all discharge—no tenderness or swelling over the mastoid.

From this time on the daily notes will explain themselves:

August 11.—Vomited, three times, milk not retained, temperature 100.6°, quinine given to point of cinchonism. pain in head continues but is somewhat less.

12th.—Quinine, gr. XX in all, which relieves symptoms, slept well.

13th.—Complains of vertigo, much increased by moving head from side to side or on sitting up, slept well, ice cap removed, symptoms relieved.

14th.—Temperature 99°, quinine gr. XXXV in all, some pain in head, but improving.

15th.—No pain in head, improving, temperature 100°, pulse 80.

16th.—Vomited some little blood last night, pulse weak, whisky f 3 ii every three hours.

17th.—Quinine discontinued, unless headache returns, pains in head, ice-cap renewed.

18th.—Temperature rose to 101.4, pulse 96, respiration 22, at 7.30, vomited curdled milk; 9.30, vomited again. A respiration detected resembling in character, Cheyne Stokes; also a convulsive tremor in fingers which seemed however voluntary and was in no way marked. Digitalis (fluid ext.) ordered m. iv every four hours. Quinine gr. V every three hours, resumed. Koumyss ordered but not retained.

Pulse continues feeble, headache is very severe. Vomited at 4.30. At 3.30 Dr. O. D. Pomeroy saw the case in consultation and suggested the use of phenacetin for headache. In all, patient took gr. XXXV of quinine.

19th.—Headache less this morning, temperature fell to normal at 1.30. Severe chill at 3.30 p. m. lasting fifteen minutes. Temperature at 5 p. m. 100.4. Vomited at 7.15 p. m. a little blood; bowels constipated, ordered two compound cathartic pills, gr. V. Slept from 12 to 3. Complained of feeling sore, no pain.

20th.—Quinine stopped, seeming to have lost effect. Warburg's tincture f 3 ii every four hours begun; complained

- of pain in head, ice cap applied, vomited at 7.40 p. m.
- 21st.—Slept six hours during night preceeding. Warburg's tincture and whiskey continued.
- Patient seen by Dr. E. C. Seguin in consultation. He detected some anæsthesia of cornea and of skin, together with some stiffening of muscles of neck and a distinct *tache cerebrale*. After a careful examination, he eliminated all meningitis of a focal nature; suggested a possibility of cerebro spinal fever.
- 22nd.—Temperature 100.6, pulse, 96. Saturated solution of potassium iodide gr. XX t. i. d. ordered; slept six hours during night.
- Ear treated, found perfectly clean. A cicatricial membrane has nearly formed. A. C. and B. C. lost in left ear, B. C. > A. C. in right.
- 23rd.—Again seen by Dr. Seguin; to-day he thinks spotted fever can be excluded. Temperature 100.1, pulse, 96. Iodide and Warburg's tinct. continued, patient brighter.
- 24th–25th.—Patient feeling good, temperature about normal pulse, rapid and weak, 112. Whiskey increased to f 3 ii, ev. 3 hours, gr. XC of iodide in all in twenty-four hours.
- 26th.—Temperature rose to 101, headache very severe, bowels moved, complained of pain in head after bowel movement, nausea lasting twenty-four hours, pulse continues 108–112, headache frontal, ice cap applied, vomited at 6.30, Iodide of Potash gr. XXX t. d.
- 27th.—Slept well.
- 28th–29th.—Pulse weak and rapid, patient very dull and apathetic, nausea in morning, condition seems critical. Prognosis bad, iodide increased to gr. XXX every three hours.
- 30th.—Gr. (150) of iodide in twenty-four hours, vomited at 10 p. m. Pulse 108, weak, temperature 100.1°.
- 31st.—Vomited at 3, continual nausea, temperature remains about same.
- September 1st.—Blister to back of neck. Pain in head unchanged.
- 2nd.—Temperature 100°, pulse 108, vomited at 11.30 a. m.
- 3rd.—Temperature rose to 100.8°, pulse 120, very weak, vomited at 6.30, 2, 3 and 9. Iodide stopped, whiskey increased to 3 ii. every two hours till effect is produced.
- 4th.—Pulse continues very weak and rapid. Quinine begun again and ordered to be given to point of cinchonism. Temperature about normal.
- 5th.—Temperature normal, pulse 112, stronger, hearing better than it has been. Medicine no longer nauseate.

[illegible]

[illegible][illegible]

- 6th.—Temperature normal, pulse 100, continues to improve. Patient looks bright. Whiskey and quinine continued.
- 7th.—Much better, seems now out of danger. Pulse decreasing in rapidity.
- 8th.—Temperature continues normal, respiration 19, pulse 90. Feeling much brighter.
- 9th.—Patient discharged.
- October 18th—Patient presented himself at office. He has now been rapidly convalescing for several weeks. There is no trouble from ear. States that yesterday there was a slight watery discharge. Examination shows the canal entirely free from all secretion; the wall of tympanum in a rather inflamed condition. Appetite good, sleeps well, pulse full and slow. At times he has neuralgic pains on left side of head. There is no improvement in hearing on side of operation.

This case has been reported at some length, in view of the interest attached to it, as a constitutional condition developed subsequent to an operation on the ear. Sexton, Burnett and Schwartz all speak in most positive terms of the entire freedom from all danger to life in the removal of the ossicles. A careful study of this case will reveal a number of interesting points in differentiating a diagnosis. It will be noticed, in the first place, that at the onset of the attack, the pain in the head was limited to the left side (the side of operation); further, that one of the most prominent symptoms was nausea, attended by vomiting and this when the diet was entirely liquid. Again the temperature curve shows marked irregularity. There was increased deafness on left side —(at time of operation watch H. D. = c: after operation, total loss of all sound.) much vertigo, a *tasche cerebrale*, feeble pulse, at first slow,—all in favor of a focal meningitis.

As against such a diagnosis however, are the following points: The lack of all reaction after operation, the patient no time having pain in ear or over mastoid region nor could any tenderness over cranium, on any occasion be detected, although there was, directly after the operation, a slight serous discharge. This soon

ceased and during the entire course of the disease, the ear gave no trouble and appeared absolutely free from all inflammation. The patient was a sturdy, raw-boned Irishman, and gave a history of a severe attack of intermittent fever in the south twenty years ago. A close study of the temperature chart, will show that in spite of the seemingly irregularity of the temperature curve, there is a plain periodicity. The days on which the patient was worse and his temperature highest, were August 11th, 18th, 26th and September 3rd. While it has been proven, that quinine, in some peculiar way influences true meningial troubles, it seems scarcely possible that it could have relieved symptoms so markedly as it did in this case.

It is interesting to note the condition of the patient from August 27th to September 3rd—while he was taking 150 grains of iodide of potash daily.

During this time his pulse became steadily weaker and more rapid; morning nausea and vomiting became constant and his whole condition resembled the typhoid state. As soon as the drug was stopped, there was an immediate improvement. The patient was undoubtedly suffering from iodide poisoning. Finally it is to be noted that there was at no time, true convulsive movements, any paralysis nor any eye symptoms.

A careful search through the current literature reveals but one case of decided reaction after this operation, although it is a common experience to have vertigo, of some days duration and Schwartz (Archiv fur Ohrenheil, 1891) saw it persist for a month. The single case referred to is reported by Wurdeman of Milwaukee (Journal Am. Med. Asso., 1892) and from which I quote as follows: "although the anaesthetic was given by a skilled assistant, the patient did not take it well. He became cyanotic at times and the progress of the operation was delayed. There was excessive vomiting after recovery. When he came to, he complained greatly of vertigo. No other reaction set in till four days after, he had pain in the night and the next morning an acute otitis media, set in, which ran two weeks."

In spite of such benign results as are thus reported by all operators, we feel that in a day when so many are doing this

operation and with such apparent impunity, a warning cannot be given too early against a failure to remember the close proximity of the important brain structures to the site of operation nor to urge accordingly a strict adherence to thorough antiseptic and avoidance of all rough or unnecessary treatment of such delicate organs.

MICROTIA. — A REPORT OF SIX CASES WITH MALFORMATIONS.

F. PIERCE HOOVER, M. D.

MICROTIA, a complete closure of one or both auricles, may be the result of arrested development, according to Billings. There may be absence of parts of the auricle, or there may exist simply a microtia, the parts being perfect in form, usually with great deformity of the auricle and malformations in the deeper parts of the ear e. g. atresia, stenosis or absence of the meatus or the labyrinth. Virchow believes it is due to disturbances in the closure of the first branchial cleft and often associated with cleft palate (Schwartz). Sometime excessive development of the auricle is observed. The cases I desire to present are interesting principally owing to their rarity, and secondly, are all malformations of the structure of the soft parts of the ear. The history of each case does not mention the use of forceps at birth, nor were there any marks to indicate their having been used. With regard to operative measures, I am not in favor of them; never have I seen a single case cured by use of the knife; they are many times benefited, but not permanently so. My experience is rather limited, not having seen more than a dozen of the above named cases. The following cases show the deformity of each ear to be different:

CASE 1. Italian, came to Manhattan Eye and Ear Hospital, single microtia, lobe of ear, left, absent, perfect in other respects, no external opening of auditory canal. Operated on by my friend, Prof. Pomeroy, found a perfect canal, kept rubber tube in opening to prevent wound from closing, and finally after couple of weeks, had silver one made with a broad flat flange which kept tube from wobbling around. The tissues were hard to keep separated, but after several months perseverance patient was not able to have tube out entirely. He was formerly deaf, but could when last seen hear the voice at two feet.

CASE 2. J. B——, aged 16, microtia of right ear, only about one-third of ear, probably the lobule. Could hear voice only about six inches when at a high pitch. I operated but could find no external canal. Wound allowed to heal and patient discharged.

CASE 3. F. J. C——, male, colored, aged 35; when a child a horse kicked him in head, said his ear had been disfigured, never remembered ever having an opening, before or since injury, in ear, and always been deaf. His left side of head had a deep dent, result of accident, and ear was fringed. He refused to be operated on.

CASE 4. Mrs. F——, aged 26. In January last saw in consultation. Only a small portion of right ear was intact, she stated she was born with it so. I operated and found external canal, kept wound open with rubber tube, the hole made showed a tendency to heal up every time tube was left out any length of time. At expiration of eight weeks, and last time I saw patient previous to her departure for Florida, she had kept tube out ten days; heard one month later she had not had to replace same. Hearing had greatly improved, could hear voice plainly, previously she could only hear on microtic side when one spoke very loud. Four months later she called on me, wound *completely* closed.

CASE 5. Infant, 16 months, mother said baby was born with ugly ear, and no hole in it, it looked as if it had been sliced with a pair of scissors. The whole appeared as a thin piece of parchment, the upper portion falling over in a sort of fold, which could be lifted up. The edges had a ragged appearance. I was able to find canal, kept same open six weeks, when the tube was removed. I wanted to improve appearance of ear, but parent did not care to have anything done yet awhile.

CASE 6. This case I was taken to see by a friend, and was by far the saddest looking specimen of an ear I ever saw. It had furrows in it, and in several places one would suppose pieces had been cut out. Had been deaf since childhood. I could not find canal upon operating, and allowed wound to heal up.

A CASE OF LABYRINTHINE DISEASE FOLLOWING AN ATTACK OF TYPHOID FEVER. IMPROVE- MENT AFTER SIXTEEN YEARS DEAFNESS.

M. D. LEDERMAN, M. D.

Among the numerous sequela which follow this insidious affection, the involvement of the structures of the internal ear is probably the most rare.

It is not uncommon to find the hearing distance lessened during a siege of this infectious fever, by the extension of a catarrhal process, affecting the mucous membrane of the nose and naso-pharynx, which gradually finds its way, by continuity of tissue through the Eustachian tube into the middle ear. The symptoms arising from such an attack are generally tinnitus, pain, with a lowering of auditory appreciation. If we tested the bone conduction at the same examination, we would probably find it not markedly diminished. Did the inflammatory condition persist, it would no doubt end in supuration, with its unpleasant consequences. If the manifestation is nothing more than an acute catarrhal otitis, the symptoms soon subside and the patient does not suffer from any loss of hearing. If the formation of pus does follow, we expect a rupture from the tympanic membrane, with the usual annoying discharge and in the majority of cases, a deterioration of the auditory sense, but not a total deafness. With proper antiseptic measures the greater number of these cases get well, unless there remains some necrosis of the ossicles, which by careful surgical interference may also be benefited. So long as the sound conducting mechanism is the seat of trouble, I think we are justified in anticipating improvement, providing we do not overlook the causative factor, be it in the nose, naso-pharynx or pharyngeal vault.

What a clouded appearance the prognostic aspect assumes, when the lesion is located in the internal chambers. We are then confronted by a dismal vision, whose sombreness has

not as yet been satisfactorily illuminated by the dazzling light of advancing science, but still casts its distressing shadow upon the unfortunate being who is its pitiable victim.

The treatment of labyrinthine deafness is at yet empirical, and though we eagerly test some lauded therapeutic measure, we finally return to our old remedy iodide of potassium. Together with the internal administration of sulphate of strychnia and counter-irritation by the cantharidal plaster it has effected a most gratifying result in the following case. The interesting feature of this case is the marked improvement of hearing after a total deafness in the left ear, for a period of sixteen years. The deafness was observed by the patient's family immediately after her illness. The happy return of the young woman's acoustic perception is indeed astounding when we take into consideration, that for eight years, she was an inmate of a deaf and dumb institute, and on her departure from the school, her hearing power was not at all improved, though she was able to appreciate direct conversation by watching the labial movements.

Through the kindness of Dr. J. Oscroft Tansley, the patient was referred to me for treatment. She was accompanied by her mother, who gave the following history:

M. J—, 19 years old; born in Germany; enjoyed good health up to her third year, when she became severely ill with typhoid fever. Hyperpyrexia was constant during the illness but the child did not suffer from delirium. The little one was sick for six weeks, and though she was able to walk before being confined to bed, at the termination of the disease she was so emaciated, the family had to carry her around on pillows. At this time the mother noticed that the young one's speech was affected, and though they addressed her in loud tones, the child merely stared at them in return. The patient's condition remained in the same position until she reached the age of seven years. The parents then observed that when a paper funnel was placed into the external canal of the right ear, the girl heard the sound of the voice, but could not distinguish the words. The test of the left ear was absolutely negative. She was then sent to the Deaf and Dumb Asylum, where she remained, as stated, for

eight years. Her stay at the institution did not benefit her hearing power in the least.

The patient presented herself at the Manhattan Eye and Ear Hospital, May 22nd, 1893, for a prognosis. After examinations by Dr. Tansley and myself, the diagnosis of labyrinthine deafness was made, and a guarded opinion given. We suggested that the affection may have been due to cerebrospinal meningitis instead of enteric fever, but the mother was positive that the attending physician said it was typhoid. A specific history could not be obtained, and as the mother is a healthy looking woman, with three children alive and in good health, none having died, lues was excluded. The following is the result of the first examination:

H. D. R. —	F. 2 inches.
H. D. R. —	W. C.
H. D. L. —	F. O.
H. D. L. —	W. O.
T. F. Best —	Right.
T. F. R. Closed —	R.
T. F. L. Closed —	R.
T. F. Both Closed —	R.
T. F. Aerial R. —	10 "
T. F. Aerial L. —	0.
T. F. Bone C. R. —	4 "
T. F. Bone C. L. —	0 "

The patient was given fifteen (15) drops of a saturated solution of potass. iodide, in milk, three times a day before meals. She was directed to increase a drop daily, until her stomach rebelled. A pill of strychnia sulph. aa gr. $\frac{1}{2}$ was prescribed after meals. A fly-blister, an inch in diameter, was placed over the mastoid process, which remained there until a good sized blister was drawn. The latter was punctured, and as soon as the soreness left, the procedure was repeated. This simple plan of treatment has resulted in a decided improvement, and at the present time, the young woman can hear conversation addressed to her in tones somewhat louder than conventional, whereas when I first spoke to her, she could not appreciate my shouting efforts. She has gradually increased her iodide drops, and at present is taking half a drachm three times daily. She has had symptoms of iodism during the months of July and August, but I am again slowly increasing her dose. This rapid and happy result was far beyond my expectation. Had this young woman remained in the Asylum,

there is scarcely a doubt that her receptive centers would have atrophied from inactivity, and her chances to become a useful member of society would have been absolutely nil. It is quite evident that in this case the nervous tissue was the structure affected, as bone conduction in the left ear was entirely negative; while in the right ear it was greatly lowered, but not altogether absent. It is hardly probable that degeneration of the nerve was extensive, for if such existed, the medicinal agents administered would have been given in vain. Again, there must have been a temporary paralysis of the of the auditory nerve, as not the slightest sound could be heard through the left ear.

"A case of required deaf-mutism, with section *is reported in a male, aged 27 years, of good family history. The deafness occurred when he was a child two and a half years old, during a prolonged illness, the symptoms of which suggested cerebro-spinal meningitis. The patient was educated at an institution for deaf mutes, and married a deaf mute. Had one child whose hearing and speech were normal. The man died of general tuberculosis and post-mortem examination showed very slight changes in the middle ear of both sides. The stapes were bound to the oval window by connective tissue bands. The base of the stapes had been absorbed. The membranous contents of the vestibule had disappeared. The first coil of the cochlea alone remained, and its interior was filled with sclerotic bony masses. The changes in the acoustic nerve were firstly, a complete atrophy of the nervous elements, and secondly, a hyperplasia of the neurilemma. The brain did not show any inflammatory products, but the inferior frontal convolution on the left side and the adjoining convolutions of the island of Reil were decidedly lower and smaller than those of the right side. The brain was other-normal." The opinion expressed was that the change in the convolutions was due to an atrophy from inactivity, as a result of deaf-mutism.

The improvement in my patient's hearing offers some hope for those similarly affected, and warns us not to dismiss them with a positive assertion that their condition is a permanent affliction, until we have given them the benefit of continued and heroic treatment. Following are the results of examinations made up to last visit:

*Larsen et Mygind—Annual of the Universal Medical Sciences, 1891.

DATE OF EXAMINATION.	MAY 22, 1893.	MAY 29, 1893.	JUNE 12, 1893.	JUNE 19, 1893.	AUG 30, 1893.	SEPT. 11, 1893.	OCT. 2, 1893.
Hearing Distance { R. E.	Fin. Nails = 2 in. Watch = Cont.	F.N.=3 in. W.=2 in.	F.N.=3 in. W.=2 in.	F.N.=6 in. W.=4 in.	F.N.=4 in. W.=2 in.	F.N.=5 in. W.=2 in.	F.N.=5 in. W.=2 in.
Hearing Distance { L. E.	F. N. = 0 W. = 0	F.N.=1 in. W.=Cont.	F.N.=1 in. W.=1 in.	F.N.=3 in. W.=1 in.	F.N.=1 in. W.=Cont.	F.N.=1 in. W.=Cont.	F.N.=1 in. W.=Cont.
Tuning Fork Best...	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.
T. F. R. E. Closed...	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.
T. F. L. E. Closed...	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.
T. F. both Closed...	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.	R. E.
T. F. Aerial R. E....	10 "	15 "	15 "	17 "	15 "	16 "	17 "
T. F. Aerial L. E....	0 "	4 "	4 "	6 "	7 "	7 "	7 "
T. F. Bone C. R. E.	4 "	6 "	7 "	10 "	12 "	12 "	15 "
T. F. Bone L. E....	0 "	4 "	5 "	7 "	11 "	6 "	7 "

Report of Diseases of Eye Treated During the Year.**AFFECTIONS OF THE CONJUNCTIVA.**

Burn of Conjunctiva.....	12
Chancre of Conjunctiva.....	1
Chemosis of Conjunctiva.....	5
Conjunctivitis, Acute.....	804
" Blenorrhœal.....	12
" Chronic Catarrhal.....	507
" Follicular.....	19
" Gonorrhœal.....	25
" Hemorrhagic.....	7
" Lachrymal.....	8
" Membranous.....	6
" Neonatorum.....	44
" Phlyctenular.....	154
" Purulent.....	29
" Pustular.....	25
" Traumatic.....	90
" Ulcerative.....	3
Cyst of Conjunctiva.....	3
Ecchymosis.....	32
Foreign Body.....	55
Lime Burn of Conjunctiva.....	10
Oedema of ".....	2
Pinguecula.....	10
Polypus of Conjunctiva.....	6
Pterygium.....	39
Symblepharon.....	6
Trachoma.....	533
" with Pannus.....	70
Tumor of Conjunctiva.....	3
Wound of ".....	7
Xerophthalmus.....	1
	<hr/>
	2,528

AFFECTIONS OF THE CORNEA.

Abrasion.....	15
Abscess.....	2
Burn.....	23
Cystoid Cicatrix.....	1
Foreign Body.....	528
Hypæmia.....	8

Keratitis	172
" Dendritic	1
" Diffuse	3
" Fascicular	3
" Interstitial	46
" Marginal	19
" Phlyctenular	165
" Punctate	2
" Serpens	3
" Suppurative	10
" Traumatic	67
" Ulcerative	323
" Vascular	30
Kerato-Conus	5
" Hypopyon	19
" Iritis	50
Leucoma, Simple, Adherent and Total	65
Opacities	254
Staphyloma	29
Wound	20
	<hr/>
	1,863

AFFECTIONS OF IRIS.

Coloboma of Iris	6
" " and Choroid	1
Irido-Choroiditis	13
" Cyclitis	16
" Cyclo-Choroiditis	3
" Dialysis, traumatic	2
" Donesis	4
Iritis	112
" Rheumatic	7
" Serous	3
" Syphilitic	29
" Traumatic	13
Mydriasis	10
Myosis	5
Occlusion of Pupil	3
Persistent Pupillary Membrane	1
Prolapse	9
Synechia, Anterior	21
" Posterior	18
Wound	3
	<hr/>
	279

AFFECTIONS OF THE LENS.

Aphakia	26
Cataract, Congenital	18
" Incipient	62
" Lamellar, or Zonular	2
" Membranous	5
" Nuclear	1
" Polar, Anterior and Posterior	7
" Senile	223
" Traumatic	47
Dislocation	24
Opacities	14
	<hr/>
	429

AFFECTIONS OF CILIARY BODY AND CHOROID.

Atrophy of Choroid	3
Choroiditis	35
" Sclerotico-Posterior	4
Cyclitis	8
Glaucoma	28
" Absolute	8
" Acute	2
" Chronic	11
Glio Sarcoma	1
Melano Sarcoma of Choroid	1
Wound Ciliary Region	6
	<hr/>
	107

AFFECTIONS OF SCLERA.

Episcleritis	30
Foreign Body in Sclera	1
Wound	3
	<hr/>
	34

AFFECTIONS OF VITREOUS.

Foreign Body in Vitreous	9
Hemorrhage	1
Hyalitis	4
Muscæ Volitantes	3
Opacities	18
	<hr/>
	35

AFFECTIONS OF GLOBE

Albinotic Eyes	5
Anophthalmus	31
Buphthalmus	2
Exophthalmus	7
Panophthalmitis	4
Phthisis Bulbi	47
Rupture of the Globe	10
Staphyloma	5
Sympathetic Ophthalmia	5
Wound	23
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	139

AFFECTIONS OF MUSCLES AND NERVES.

Insufficiency of External Recti	2
" Internal "	5
Nystagmus	13
Paralysis of Accommodation	3
" 3d Nerve	26
" Ciliary Branch of 3d Nerve	7
" 4th Nerve	1
" 6th "	11
" 7th "	12
" Inferior Oblique	4
" Internal Rectus	6
" Superior "	3
Paresis External Rectus	1
" Internal "	3
Ptoxis	26
Strabismus Convergens	355
" Divergens	50
" Periodic	25
	<hr/>
	553

AFFECTIONS OF REFRACTION AND ACCOMMODATION.

Anisometropia	19
Asthenopia	47
Astigmatism, Hyperopic	742
" " Compound	104
" Irregular	5
" Mixed	86
" Myopic	191

Astigmatism, Myopic Compound.....	51
Hypermetropia	968
" with Presbyopia.....	236
Myopia.....	416
Presbyopia.....	456
	<hr/>
	3,321

AFFECTIONS OF ORBIT.

Carcinoma.....	2
Cellulitis of Orbit.....	8
Cyst.....	1
Lupus.....	1
Necrosis	2
Osteoma.....	2
Periostitis	1
Sarcoma Round Cell.....	1
Tumor	1
Wound	5
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	24

AFFECTIONS OF OPTIC NERVE AND RETINA.

Amblyopia	3
" Ex-abusu.....	12
" Hysterical	1
Amyloid Degeneration Optic Nerve.....	1
Atrophy of Optic Nerve.....	93
Detachment of Retina	42
Embolism of Central Retinal Artery	4
Glioma of Retina	3
Hemeralopia	1
Hemianopsia	1
Neuritis	21
Neuro-Retinitis	20
" Albuminuric	9
" Hemorrhagic.....	6
Opaque Optic Nerve Fibres.....	4
Retinitis.....	12
" Hemorrhagic	14
" Maculata.....	1
" Nephritic.....	8
" Pigmentosa	3
Retino Choroiditis.....	13
	<hr/>
	272

AFFECTIONS OF LACHRYMAL APPARATUS.

Dacryocystitis.....	62
Lachrymal Catarrh.....	32
Misplaced Punctum.....	1
Mucocele Lachrymal Sac.....	7
Necrosis " Bone.....	2
Occlusion of Duct Congenital.....	1
Stricture Lachrymal Canal.....	18
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	123

AFFECTIONS OF LIDS.

Abscess.....	21
Anchyloblepharon.....	1
Blepharitis Marginalis.....	313
Blepharospasm.....	11
Burn.....	9
Chalazion.....	169
Cicatricial Contraction.....	1
Cystic Tumor.....	6
Ecchymosis.....	13
Ectropion.....	14
Eczema.....	6
Emphysema.....	1
Entropion.....	14
Epicanthus.....	4
Epithelioma.....	4
Foreign Body in Lid.....	2
Hæmatoma.....	2
Herpes.....	1
Hordeolum.....	67
Molluscum Contagiosum.....	4
Oedema.....	7
Phthiriasis Ciliarum.....	1
Trichiasis.....	20
Tumor.....	8
Ulcer.....	3
Verruca.....	5
Wound.....	14
Xanthelasma.....	1
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	722

UNCLASSIFIED.

Abscess of Brow	2
" " Frontal Sinus	2
Burn of Face.....	1
Facial Erysipelas	2
" Neuralgia.....	1
Fistula of Frontal Sinus.....	1
Graves' Disease.....	1
Improper Cases.....	27
Ocular Vertigo.....	1
Tumor of Brow.....	3
Unrecorded.....	161
Wound of Brow.....	3
" " Face	2
" " Scalp.....	4

 211

OPERATIONS ON THE EYE.

Advancement of External Rectus.....	2
" " Internal "	6
Agnew's Hook Operation for Membranous Cataract....	3
Bowman's Operation for Dacryocystitis	46
" " " Stenosis Lachrymal Canal....	8
Cantholysis for Entropion.....	3
" " Trachoma.....	20
" " " and Pannus.....	5
" " Ulcerative Keratitis.....	3
Canthotomy for Ulcerative "	4
Cataract Extraction, after Preliminary Iridectomy....	5
" " " for Luxated Lens.....	3
" " " Modified Graefe.....	4
" " " Simple	76
" " " (Traumatic).....	7
" " " with Glaucoma.....	2
Cauterization, Abscess of Cornea.....	3
" " Corneal Ulcer.....	35
" " Keratitis Dendritica	1
" " Prolapsed Iris.....	1
" " Pterygium	1
Critchett's Operation for Anterior Staphyloma.....	6
" " " Buphthalmus	1
Curetting the Cornea for Keratitis Dendritica.....	3

Enucleation for Buphthalmus	1
“ “ Foreign Body in Globe	1
“ “ Glaucoma Absolutum	4
“ “ Glio-Sarcoma	1
“ “ Irido Choroiditis	4
“ “ “ Cyclitis	2
“ “ Melano-Sarcoma of Choroid	1
“ “ Panophthalmitis	1
“ “ Phthisis Bulbi	12
“ “ Rupture of Globe	6
“ “ Staphyloma of Cornea	1
“ “ Sympathetic Ophthalmia	6
Excision of Granulation on Conjunctiva after Tenotomy	4
“ “ “ “ Cornea	1
“ “ Prolapsed Iris	4
“ “ Section of Cornea Sloughing	1
Evisceration for Panophthalmitis	1
Expression of Trachoma	45
Grattage	5
Incision, Abscess	10
“ “ of Lid	13
“ “ “ Lachrymal Sac	7
“ “ “ “ Gland	1
“ Chalazion	73
“ Cystic Tumor, Scalp	2
“ Hordeolum	5
“ Cellulitis, Lid	1
“ Staphyloma of Cornea	1
Iridectomy for Artificial Pupil	4
“ “ Traumatic Cataract	3
“ “ Glaucoma, Acute	18
“ “ “ Chronic	4
“ “ Leucoma Adherens	3
“ “ Occluded Pupils	11
“ “ Opacity of Cornea	1
“ “ Prolapsed Iris	10
“ “ Serous Iritis	1
“ “ Staphyloma of Cornea	5
“ Preliminary to Cataract Extraction	6
Keratonyxis for Congenital Cataract	14
“ “ Membranous Cataract	40
“ “ Soft	4
“ “ Traumatic	18
Paracentesis for Glaucoma	2
“ “ Keratitis Dendritica	1

Paracentesis for Keratitis Ulcerative	3
“ “ Kerato-Globus	1
“ “ Hypopyon	14
“ “ Iritis	1
“ “ Staphyloma	2
“ and Massage for Immature Cataract	3
Peritomy for Pannus	1
Plastic for Symblepharon	4
“ “ Wound	1
“ on Lids, for Ectropion	2
“ “ Entropion	12
“ “ Trichiasis	2
“ “ Epicanthus	1
“ “ Ptosis	3
Removal of Cyst of Lid	7
“ “ Cystic Tumor, Brow	1
“ “ Foreign Body from Anterior Chamber	1
“ “ “ “ in Brow	2
“ “ “ “ on Conjunctiva	55
“ “ “ “ on Cornea	528
“ “ “ “ on Lid	1
“ “ “ “ Sclera	1
“ “ “ “ from Vitreous with Magnet.	2
“ “ Granulation from Orbit	1
“ “ Papilloma	2
“ “ Pterygium	17
“ “ Tumor of Lid	7
“ “ “ Orbit	1
“ “ Verrucca	3
Sclerotomy for Glaucoma Chronic and Secondary	4
Tattooing for Leucoma of Cornea	
Tenotomy for Convergent Strabismus	113
“ “ Divergent “ and Advancement	6
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	1,411

DISEASES OF THE EAR.

AFFECTIONS OF AURICLE AND EXTERNAL EAR.

Abscess	7
Aspergillus	1
Cerumen, Impacted	359
Cyst of Auricle	3
Cystic Tumor behind Auricle	2
Deformed Auricle	4

MANHATTAN EYE AND EAR HOSPITAL REPORTS.

81

Eczema.....	83
Exostosis of Auditory Canal.....	3
Fistula of Auricle	1
Foreign Body.....	15
Furuncle	35
Haematoma	2
Inflammation, Acute, Diffuse.....	44
" " Traumatic.....	1
Paralysis Sixth Nerve.....	1
Polypi.....	13
Wound of Auditory Canal.....	1
" " Auricle.....	2

577

AFFECTIONS OF MIDDLE EAR.

Adhesive Inflammation.....	6
Foreign Body in Tympanum.....	2
Otalgia.	39
Otitis Media Catarrhalis Acuta.....	169
" " " Chronica	804
" " " Subacuta.....	52
" " Suppurativa Acuta.....	299
" " " Chronica.....	403
" " " Subacuta	10
Wound of Membrana Tympani.....	7

1,791

AFFECTIONS OF MASTOID.

Mastoiditis	25
Mastoid Fistula	1
Periostitis.....	22

48

INTERNAL EAR.

Disease of Acoustic Nerves.....	76
" " Internal Ear	43
Injury of Middle and Internal Ear	1
Deaf-Mutism	12

132

UNCLASSIFIED.

Adenitis, Cervical	4
Improper Case	2
Necrosis of Antrum	1
Parotitis.	1
Pharyngitis, Acute	4
" Chronic.	6
Post-Auricular Adenitis	1
Presbykousis	4
Rhinitis, Chronic Hypertrophic	6
" Acute	2
Tonsillitis, Follicular	1
Unrecorded	90

122

EAR OPERATIONS.

Curetting Adenoids of Pharynx	32
" Granulations of Tympanum	9
" Mastoid Sinus	2
" Necrosed Ossicles	1
" Exostosis Septum Nasi	1
" Uvula	1
Excision of Membrana Tympani for Otitis Media Catarrh- alis Chronica	4
Excision of Tonsils	9
Incision for Abscess	5
" " Furuncles and Tumors	11
" " Occluded Meatus	1
" of Canal for Otitis Externa	2
" Wilde's for Mastoid Periostitis	12
Opening of Mastoid Cells	9
Paracentesis for Otitis Media Catarrhalis Acuta	8
" " " " " Chronica	2
Plastic for Deformed Auricle	1
Removal of Foreign Body	6
" " Granulations in Auditory Canal	2
" " Malleus	4
" " Lymphatic Gland	2
" " Necrosed Bone in Mastoid	2
" " Ossicles	8
" " Polypus	22

156

RECAPITULATION.

DISEASES OF THE EYE.

Ciliary Body and Choroid	107
Conjunctiva	2,528
Cornea	1,863
Globe	139
Iris	279
Lachrymal Apparatus	123
Lens	429
Lids	722
Muscles and Nerves	553
Optic Nerves and Retina	272
Orbit	24
Refraction and Accommodation	332
Sclera	34
Vitreous	35
Unclassified	211

10,640

OPERATIONS ON THE EYE.

Advancements	14
Agnew's Operations for Membranous Cataract	3
Bowman's, Stilling's	54
Cantholyses	28
Canthotomies	4
Cataract	101
Cauterizations	38
Crichett's Operation	7
Curetting Cornea	3
Enucleations	40
Excisions and Incisions	123
Expression of Trachoma	45
Grattage for Granular Conjunctivitis	5
Iridectomies	66
Keratomyxes	76
Paracenteses	27
Plastic Operations	25
Removal of Tumors, Foreign Bodies, etc	629
Sclerotomies	4
Tenotomies	119

1,411

DISEASES OF THE EAR.

Auricle and External Auditory Canal	577
Internal Ear	132
Mastoid	48
Middle Ear	1,791
Unclassed	122
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	2,670

OPERATIONS ON THE EAR.

Curetting, Adenoids of Pharynx, Granulations, etc.	42
" Mastoid Sinus	2
Drilling Mastoid for Abscess.	2
Incisions, Wilde's, and for Tumors, etc.	38
Paracentesis Membrana Tympani	10
Plastic for Deformed Auricle.	1
Removal of Tumors, Foreign Bodies, etc.	46
Unclassed	15
	<hr/>
	156
Total Number Diseases of the Eye	10,640
" " " " Ear	2,670
	<hr/>
	13,310

A CASE OF CYST OF THE EPIGLOTTIS.

CHAS. H. KNIGHT, M. D.

CYSTIC tumors of the larynx are among the rarest of the benign growths met with in this region. They are generally retention cysts, resulting from gradual distension of a mucous follicle whose excretory duct has become sealed. A curious exception to this rule is met with in a case described by Blanc (*Rev. mens. de laryngol., etc., t. iii, 1883, p. 324*) of congenital branchial cyst with a very extraordinary history. At the twelfth Congress of Italian Physicians and Surgeons in 1887, Masini referred to a specimen of cystic tumor of the vocal cord in the Pathological Museum at Genoa, from a study of which he had concluded that the cyst in this case was a result of "imperfect glandular formation." (*The Jour. of Laryngol., etc., 1887, p. 47.*)

Since the demonstration of glandular elements in the soft tissues covering the epiglottis and the vocal bands the development of cysts in these situations is readily explained.

According to Mackenzie, their usual site is the ventricle of the larynx or the epiglottis. The first case on record, that reported by Durham, in 1863, occupied the latter situation, while the first intra-laryngeal cyst observed, that reported by Virchow in the same year, was found in the ventricle of Morgagni. In one case reported by Lennox Browne, the cyst was attached to the left vocal band near the anterior commissure. Of sixteen cases observed by Garel (*Rev. mens. de laryngol., etc., June, 1887, p. 342*), fourteen of which had their diagnosis confirmed by operation, the anterior third of the cord was the chosen site in a large proportion. In Major's case also the cyst was attached to the free margin of the right vocal cord anteriorly. (*Proc. Montreal Med.-Chir. Soc., 1887.*)

Audubert, in reporting his case of cyst of the left ventricular band (*Rev. mens. de laryngol., etc., April, 1888, p. 189*),

mentions that he has discovered a record of only three cases of cyst in that situation. Moure, in his *Study of Cysts of the Larynx*, 1887, found that in a very large percentage of cases these growths were attached to the vocal cord. A similar result was reached by Cervesato, and the testimony furnished by Schwartz in his classical thesis on *Tumors of the Larynx*, 1886, is overwhelming that the structure of the vocal band is favorable to cystic development. Thus of 138 cases of cyst of the larynx collected by this author 67 were extra-laryngeal, 61 being of the epiglottis, while of the intra-laryngeal 48 were of the vocal band and only 9 of the ventricle. Cysts in the arytenoid region, of which the case reported by Furundarena-Labat in the *Rev. de laryngol.*, etc., April 15, 1889, is an interesting example, are still more infrequent, Schwartz's list containing but four thus implanted.

The case reported by Abercrombie (*Trans. Lond. Path. Soc.*, xxxii, 33) of cyst rather larger than a hemp-seed springing from the crico-thyroid membrane and found post-mortem in a child fourteen days old, is perhaps unique.

The contents of these cysts vary greatly in character and quantity. They are usually fluid and serous, but may be gelatinous, or colloid, or bloody, as in cases reported by Thost (*Jour. of Laryngol.*, 1891, 209) and others. The tumor may reach such dimensions as to necessitate tracheotomy. In a case of cyst of the left ary-epiglottic ligament in a child of ten years pharyngotomy was done by Krakauer (*Berl. klin. Wchnschr.*, 1883, 701). Casselberry operated upon a cystoma of the left arytenoid which contained eight centimetres of fluid. (*Jour. of Laryngol.*, 1890, 534.)

It does not appear that the development of these neoplasms is restricted to any special period of life. The age of my own case is given as 40 years, but the patient was undoubtedly much older. Browne, in *Burnett's System of Diseases of the Ear, Nose and Throat*, Vol. II, page 759, refers to a case, recorded by Edis in the *Trans. of the Obstet. Soc.*, Vol. XVIII, in which a cyst the size of a hazel-nut caused the death of an infant thirty-seven hours after birth. A

majority of cases of laryngeal cyst have been of the male sex. A fair proportion have been vocalists, but there hardly seems to be sufficient ground for expressing the opinion that these neoplasms are especially encouraged by excessive use of the voice.

The diagnosis of these cysts, at least when occurring in the upper part of the larynx, must be free from difficulty. They are more likely to resemble a myxoma than any other form of laryngeal neoplasm. Translucency, which Lefferts insists upon as a diagnostic point, (*Medical Record*, March 12, 1881, 289), from which Elsberg dissents (*Arch of Laryngol.*, 1882, 186), must of course depend upon the character of the contents. A thin walled recent cyst would naturally present this feature, and the modern translumination test may well come to our assistance in this particular. The elasticity of the tumor when within reach of the finger or when touched by the probe may be easily appreciated.

The treatment by simple incision has in most cases been sufficient. In some excision of a portion of the cyst wall has been necessary. This may be done with the laryngeal forceps, but when the neoplasm is accessible its removal entire with the wire snare is to be preferred. In these days of cocaine and improved methods of endo-laryngeal, manipulation the old-fashioned advice to permit the cyst to undergo spontaneous rupture is hardly acceptable. Nor is such advice altogether devoid of danger, since a pedunculated cyst might assume such a position or reach such dimensions as to offer serious obstruction to respiration, as in the case reported by Hunter Mackenzie in the *Brit. Med. Jour.*, December 3rd, 1892. Vascularity is seldom so marked as to suggest the need of using the electric loop rather than the cold wire.

The following case came to the throat clinic with a diagnosis of "cancer of the larynx." The patient was a colored man, about 40 years old, who gave an indefinite history of a feeling like that of a foreign body in the throat which induced a frequent desire to swallow. This sensation had

been noticed only within the previous three weeks. There had been slight cough without expectoration for a few days. There was no dyspnoea, no dysphagia, and no pain. The general condition was excellent. No alteration in voice. On first introduction of the mirror no view whatever of the larynx could be obtained, the epiglottis apparently falling backward and completely concealing the rima glottidis. But when retching was excited there popped into view a smooth round tumor the size of a hickory nut. It was pale in color, and its surface was traversed by numerous large blood vessels. On palpation this tumor was found to be soft, elastic and insensitive. It was freely movable and was attached to the left side of the epiglottis. It was impossible to see the interior of the larynx without hooking up the epiglottis. Nothing abnormal could be discovered within the glottis.

The tumor was readily removed by means of the cold wire snare, without hemorrhage and without pain, the fauces having previously been sprayed with a ten per cent. solution of cocaine. There was no reaction from the operation and two months later there had been no recurrence. It was curious to notice that the epiglottis still maintained its pendulous position, from which fact, as well as from the size of the tumor, it must be inferred that the neoplasm had been in existence much longer than the clinical history would indicate. The contents of the cyst, which collapsed during removal, appeared to be thin and serous. The wound left by the operation involved almost the entire left margin of the epiglottis and healed within two weeks, leaving no trace. The diagnosis was confirmed by the microscope.



TWO CASES OF CONGENITAL HYPERTROPHY OF THE TONGUE.

WALTER F. CHAPPELL, M. D. M. R. C. S. Eng.

(*Illustrated.*)

CASE 1. Mr. H—, (Plate I.) aged 35 years. Had a large tongue since birth; when four years of age the increasing size and unusual appearance of his tongue alarmed his mother so much that she consulted several physicians regarding it; some "stomach difficulty" was credited with being the cause of the condition. Regulation of the diet was the only treatment recommended. At the age of fifteen, every cold, bilious attack or attack of constipation, caused the tongue to assume a dark bluish color and enlarge to such a degree that it would fill the mouth, protrude between the teeth and make it impossible to close the mouth. A few years later, the venous engorgement of the tongue was so great during the attacks, that respiration was much interfered with, and on one occasion tracheotomy was contemplated. The application of leeches directly to the tongue made it unnecessary to open the trachea on that occasion.

Several times, nourishment had to be given through a tube, passed into the nasal cavity and œsophagus.

On the first day of ordinary attack, simple fullness of the mouth and throat was the only discomfort felt; by the second day blood began to ooze from all parts of the tongue, and continued in varying quantities for twenty-four to forty-eight hours. It then lessened and the tongue looked dry and shriveled and its epithelium fell off in scales, which continued to be shed some four or five days, until the dorsum of the tongue presented a red, beefy appearance, and the patient said it was very raw and sore. When I first saw the case, Mr. H— was just recovering from an attack brought on, he said, from biliousness. The veins beneath the tongue looked like masses of small worms rolled tightly together and the papillæ were enormously hypertrophied, varying in size, but averaging from one-half to three-fourths of an inch in length and about the same in breadth. They resembled many small cauliflowers standing on end and packed close together. The clusters could easily be separated and the small vein entering each plainly seen. Several large venous masses hung from

the base of the tongue just above the epiglottis. In appearance they resembled the hemorrhoidal masses of the rectum. This patient suffered from the latter affection also, and during the acute attack of lingual enlargement, the rectal hemorrhoids became large, painful and bled considerably. The sublingual and submaxillary glands would also enlarge during these attacks and become very tender. Walking quickly, going up stairs or excitement, caused labored respiration, and a sensation of a mass in the pharynx which could not be gotten rid of. This condition, as well as the feeling of impending suffocation occurring during the acute symptoms, were no doubt due to the varying condition of the varix hanging from the root of the tongue.

CASE 2. M. J—, (female) aged 17 years. At birth the right side of the face was noticed to be larger than the left, and wanting in expression. On further examination, the cause of this condition was found in the increased venous supply due to enlarged lingual, facial and temporal veins of the right side. When first examined by me at the age of 17 years, there was a general varix of the right side of the face and neck, which varied much in size at the menstrual period. The papillæ of the right side of the tongue were hypertrophied and presented a cauliflower appearance, as described in the first case, and the same condition of varix also existed on the under surface and at the base of the tongue. Acute symptoms, resembling in character those in Case 1, but much less in severity, were frequent. Cold and indigestion caused these acute attacks, and they were specially liable to occur at the period of menstruation.

Nothing could be done to effect a cure in either of these cases, owing to the large and numerous vessels implicated. Strict attention to diet and a mode of living calculated to prevent taking cold and becoming bilious, and abstaining from excitement, violent exercise, etc., kept the sufferers comfortable.



A CASE OF TUBERCULOSIS OF THE THYROID GLAND.

WALTER F. CHAPPELL, M. D. M. R. C. S. Eng.

(Illustrated.)

I. G—, (Plate II.) Male, aged 15 years. Father died of phthisis at the age of 30. Two sisters died of the same disease in their twentieth year. Mother and three brothers alive and well. This patient was quite well up to his thirteenth year when he had a sore throat, which lasted about five days. Two months later the thyroid gland began to enlarge and became hard and tender. The anterior and posterior cervical glands underwent a similar change. This condition continued some three months, the skin over the thyroid region becoming red and gradually deepening in color until a small opening appeared over the isthmus of the thyroid from which a watery fluid, containing small white curdy masses escaped. A troublesome cough and hoarseness appeared simultaneously with the enlargement of the thyroid, and has continued more or less ever since. On presenting himself at the Hospital in June 1892, I found him considerably emaciated. Temperature 101. F., pulse 132; weight 80 pounds; the thyroid gland considerably enlarged and very hard, with some surrounding cellulitis and cervical and mesenteric adenitis, small abscess above the right clavicle, considerable dyspnoea and a constant desire to cough. A small sinus over the isthmus of the thyroid gland, discharged a fluid already described, which was found to contain the tubercle bacillus. The apices of both lungs gave signs of advanced tuberculosis, and tubercle bacilli were found in great numbers in the sputa.

The mucous membrane covering the vocal cords, arytenoid cartilages and posterior commissure of the larynx, was red and thickened; spasmodic cough and profuse perspiration caused much distress at night.

The case is reported on account of the rarity of tuberculosis attacking the thyroid gland.

EMPHYEMA OF THE FRONTAL SINUS WITH UNUSUAL CONDITIONS—DEATH—AUTOPSY.

A. E. ADAMS, M. D., AND JAMES E. H. NICHOLS, M. D.

(*Illustrated.*)

THE following case is presented on account of its rarity, the location of the fistulæ, the absence of the history of injury, the probable cause being nasal polypi, and its final results and termination.

[BY DR. ADAMS.]

Miss G. B—, a well developed girl of 20, consulted me on December 24th, 1892.

The previous history, prior to the last three years, was of no special importance as regards this case.

The first symptoms noticed about three years ago, were frontal headache and an aggravating dry cough; later there was some nasal obstruction, which gradually increased until she consulted the family physician, who removed some polypi from the nose and gave relief for a time.

After a few weeks the family noticed the eyes were more prominent than usual, and in a short time they actually protruded. This was followed by an abscess over the right eye, which eventually opened just below the brow and near the middle of the lid.

Only a short time elapsed before a similar abscess and opening appeared over the left eye.

These openings gradually closed until only fistulæ remained, and from these fistulæ large quantities of pus were discharged.

As the new connective tissue contracted around the former abscess and opening it caused a marked retraction of the right upper lid. This retraction was so great that the patient was unable to close the lids, and a corneal ulcer followed.

Eventually this was healed and a leucoma covering the whole lower half of the cornea remained.

The left side followed a similar course, except that the upper lid was everted and the free edge of the lid was drawn up and back and firmly attached to the lower edge of the fistulous opening.





A probe passed into left fistula came in contact with bare bone. The nares were filled and distended, so that the polypi were plainly visible without the aid of a speculum.

The cough continued about the same. The patient and family were informed of the necessity of completely removing the polypi from the nose, but on account of the remoteness of the patient's residence from my office it did not seem practicable to do it at her home, and I advised her to enter the Manhattan Eye and Ear Hospital, where, after the polypi had been removed and a free communication established between the sinuses and the nose, I proposed to open up the fistulæ and cavities and cleanse them thoroughly, then later, when in a fit condition, do a plastic operation and restore the lids to their normal position. The patient did not fully decide to come into the Hospital until September, '93, when she presented herself for treatment.

[BY DR. NICHOLS.]

Miss G. B.— first came under my care Oct. 9, 1893, giving the following history:

About five years ago she first noticed some nasal obstruction, which gradually increased, with some discharge and odor. Three years since began to complain of weakness of the eyes and a full feeling of the orbit. In April, 1890, the right upper lid began to swell and an abscess developed, which was opened at the outer edge of the orbit. Apparent recovery followed. Two months later a second abscess developed in the same situation, which was opened through the upper lid. No pus was obtained and two days after a spontaneous opening occurred, with the discharge of a large amount of pus. The wound did not heal, but a discharging sinus has remained until the present. By advice of an ophthalmic surgeon, syringing daily with a solution of carbolic acid was kept up eight months, but with no improvement. The eyeballs became very much displaced, in a direction downwards, forwards and outwards, and a keratitis ensued, with ulceration of the cornea and leucoma, causing total blindness. In March, 1892, the left eye had also begun to protrude markedly, and an abscess developed which was opened twice by her family physician at the outer margin of the orbit, with slight amelioration of symptoms. Later the abscess opened spontaneously in the center of the lid and a large amount of fetid pus was evacuated. The wound failed to close and a discharging sinus remained as on the other

side. The eyesight was not affected. The nasal obstruction increased until no nasal breathing was possible, and the patient complained frequently of pressure symptoms in the nasal and frontal regions. Her general health continued fair, but she was especially liable to "head colds," during which she was very ill, with rapid and high rise of temperature. No treatment other than mentioned was resorted to until she came into the Hospital.

Condition.—There is a marked frog-face deformity, both eyes being displaced outward and downward, with ectropion of both upper lids, more marked on the left side.

In each upper lid, about the centre, is a fistula from which pus oozes. A small probe passes directly into the frontal sinus and backwards for about 5 c. m., touching denuded bone on both sides. There is a slight odor of necrosed bone.

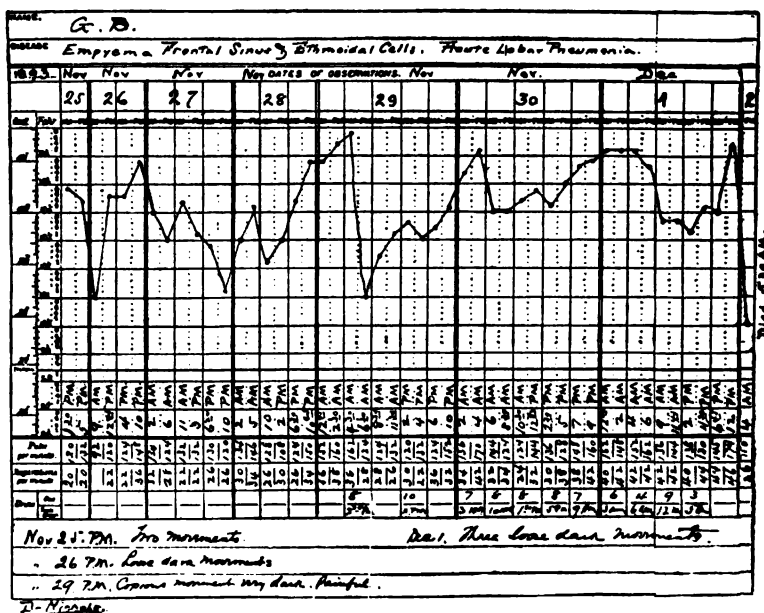
The nose is broadened and bulging, the distance between the inner canthi being 5 c. m. and the base being pushed forward of the frontal plane. The nasal bones are widely separated in their whole extent, the septum showing as a ridge with a soft depression on either side; at the lower edge the bones are 4.5 c. m. apart. Nasal breathing absolutely nil. Myxomata are seen protruding from both nostrils covered with muco-pus. The voice is "dead." Post-rhinal inspection discloses the myxomata filling the choanæ, and lying on the upper surface of the velum palati. No glimpse of the septum or turbinated bodies. Patient complains of constant frontal headache, and a sensation of pushing and bursting in the frontal region. She is capricious in her appetite, has a slight but continuous teasing cough, but no other pulmonary symptoms.

Diagnosis.—Myxomata Nasi; Empyema of Frontal Sinus and Ethmoidal cells, with Exophthalmos Right and Left, due to pressure and bagging of pus in the orbital cavity.

Treatment.—October 11th. 10 grm. myxomata removed from right side by snare. Nasal cavity and sinuses irrigated with Sol. Boracic Acid. October 13th. 10 grm. myxomata removed from both nares. Right somewhat opened. After removal, escape of large quantity of foul smelling cheesy pus, apparently from the middle meatus. Instant relief from pressure of frontal region. Can use right nostril. October 19th. 4 grm. myxomata removed from both nares, including the anterior end of the right middle turbinated body, which had undergone polypoid degeneration. Evacuation of large amount of cheesy, fetid pus. Cavity thoroughly irrigated; fluid flows into naso-pharynx. October 20th. Developed an

acute follicular tonsillitis. Temp. 105° , preceded by severe chill. Constipation. Ordered gargle of hot saturated solution of Sodium Bicarb. every hour and Tinct. Guaiaci Ammon. ʒi q. 2 h. October 22d. Temp. down and feeling better. October 23rd. Pharynx again normal and all tonsillar symptoms subsided. Able to wash through left fistula into nasal cavity. Copious discharge pus. Face less markedly deformed and patient more comfortable by reason of nasal respiration. October 24th. Temp. at 7 A. M. $96\frac{2}{3}^{\circ}$, returning to normal in P. M. Condition good. November 3rd. Periodical removal of masses of myxomata, in all 20 grm., with great relief. Patient feeling much better. Gets out daily. No cough. Right middle turbinated visible and healthier, though still covered with pus, its posterior portion in close contact with septum. Dead bone detectable. Superior meatus still filled with polypi. Left middle turbinated also seen. Cavity in same condition as right. Free flow of pus, on washing through both fistulae. No headache. Easy nasal respiration. November 10th. Removed a portion of left middle turbinated, which had suffered degeneration. Was cystic in character and immense amount of cheesy pus liberated. November 11th. Temp. 101° with much malaise. No tonsillar symptoms, but some increase in cough and complaint of soreness in her lungs. Some coarse rales discovered. November 13th. Chloroform liniment to chest. November 15th. No chest soreness. November 16th. Has been in bed for last five days with varying febrile movement. To-day temp. normal. November 17th. Temp. normal. November 23d. Patient recovered from last indisposition. To-day removed small amount myxomata from right superior meatus, and also a small portion of left middle turbinated, to which was attached a good sized polyp. Complained some of this hurting her. November 24th. Confined to bed with cold, and considerable general disturbance. November 25th. High fever. Aches all over. R. Phenacetin gr. X. q. 4 h. November 26th. Fever continues. Pain in head. Continue Phenacetine and apply ice cloths to head. November 27th. Temp. still high. Feels very weak. Much difficulty in respiration. Pulse—respiration rather very variable. Alcohol bath q. 4. h.: Antipyrine, grs. \times q. 4. h. Several bad coughing spells, with rusty sputum. Examination shows right lung hepatized in lower lobes. Takes nourishment well; milk, beef tea and whiskey, ʒii every two hours. November 28th. Worse. Slept little. Respirations more rapid. Pulse strong. Vomited once. Ammon. Chlor. gr.v and Tinct. Digitalis

$\pi \times$. every three hours. Nourishment and bath continued. November 29th. No improvement in pulmonary symptoms. Some delirium and cardiac weakening. Very restless. Coughs very hard and expectorates freely. Temp. at 4 A. M. $106\frac{1}{2}^{\circ}$. Later, 6 A. M., dropped to 101° . Passed bloody urine. Temp. fell a little for a time, with subsequent rise. Treatment same. November 30th. No improvement. During night obliged to give Nitro Glycerine πi every two hours for cardiac depression. Patient delirious when not spoken to. Right lung entirely hepatized. No vesicular murmur. Left lower lobe congested. Later in the day complains of shortness of breath. R. Strophanthus πvi to alternate with Nitro Glycerine. Continue baths. Temp. varies between 104° and 106° . Facies drawn. December 1st. Patient losing strength. Coughing very hard and very delirious at times. Sputum lighter and copious. Complains of a roaring in her ears. Continue treatment. December 2d. Very delirious during night and failed to recognize nurses. Sank very fast and died at 6:20 A. M.



Autopsy.—Eight hours after death. General condition fair. Opened thorax. R. cavity showed many pleuritic adhesions. Lung solid, gray hepatization beginning, bronchi, large and small, full of muco-pus. L. cavity showed pleuritic adhesions. Left lower lobe in condition of hypostatic congestion. Upper lobe clear, with exception of some bronchial exudation.

Heart distended in diastole, otherwise normal. Abdominal cavity not opened. Calvarium removed. Dura and pia thickened and small clots in sinuses. Cerebrum in good condition. No evidences of septic extension from orbits, nor necrosis of roof of orbits. Opened orbital cavities from above. Found both filled with thick, tenacious pus. Wall between frontal sinus and orbits entirely gone; also inner wall of both orbits necrosed so that ethmoidal cells and orbit formed one cavity. Large opening into nasal chambers, but dammed up by remaining myxomata in superior meatus.

The result of the autopsy was to confirm the diagnosis previously made and showed that if the pneumonia had not intervened the prognosis for recovery would have been excellent. The pneumonia was not probably of septic origin.

A CASE OF EXTENSIVE ADHESIONS BETWEEN
BOTH EUSTACHIAN TUBES AND THE VAULT
OF THE PHARYNX; THE RESULT OF ADENOID
GROWTHS.

WENDELL C. PHILLIPS, M. D.

(With one Colored Illustration.)

DURING the past year several patients with more or less extensive adhesions between the Eustachian orifices and the vault of the pharynx, have come under my care, all presenting symptoms of ear disease and faulty hearing.

In one of these cases, the adhesions were so extensive and the con-comitant symptoms and results so marked, that it has seemed to me to be of enough importance to report the history with an illustration for the benefit of the readers of the Hospital report.

History:

Mrs. L. B—, widow, aged 31 years, seamstress. During childhood she had repeated attacks of bronchial inflammation and her parents were told that she would probably not survive childhood. At present she is robust and healthy as far as her general health is concerned. All through life she has been annoyed by almost constant dropping from the post nasal region into the mouth. She has had, during her life, several attacks of inflammation of the middle ear, and has been afflicted by deafness. About six years ago she began to lose her hearing, and now she has total deafness.

Condition

Right:
without concha
Left: 1/2
half and is

Tests: Rt. Watch $\frac{3}{5}$, nails three feet. Rinné A. C. 4', B. C. 10'. Maxillary—Rt. frontal Rt. occipital Rt.

L. Watch $\frac{3}{5}$, nails one foot, Rinné A. C. 3', B. C. 7'.

Condition of Rhino-pharynx:

Her anterior nares are in nearly normal condition. In the superior pharynx, as will be seen by referring to the cut, there are wide bands of connective tissue passing from the upper borders of the Eustachian orifices to the body of the sphenoid bone, each terminating in a small mass of adenoids. The Eustachian tubes are drawn upwards and towards the median line. The bands are almost continuous with each other and together form an arch. The tubes respond in movement to any force upon the bands. That these bands are the result of adenoids there can be little doubt.

In November these bands were cauterized by means of a curved galvano-cautery electrode with a flat bone protector, which enabled me to burn out the band without burning the wall of the pharynx. In two cases operated upon since, the adhesions have been broken up with a simple curved applicator, care being taken to see the entire operation. The bands are not tough and they break easily.

On one side there has been a slight tendency for the band to form again, but by occasionally passing the probe, this has been prevented. The operation is so recent that no statement as to its results upon the hearing can be rendered. Future developments in the history of this case, and possibly the histories of other similar cases, will be reported in the next issue of the Hospital report.

I have failed so far to find any literature upon this subject except the mention of its existence by Goodwillie.*

* "Deafness from nasal and dental diseases." *N. Y. Med. Journal*, August 24, 1889. P: ge 2108.

AN UNUSUAL CASE OF TUBERCULOSIS OF THE LARYNX.

FRED. E. HOPKINS, M. D.

(Illustrated.)

THE following case, whose history I have the pleasure of reporting, possesses certain features which I believe are sufficiently unusual to warrant a brief consideration.

August B——, born in this country of German parentage, 52 years of age, by occupation a brickhandler, married and the father of healthy children. His father returned to Germany at the age of 80, and was living at the last report. According to the statement of the patient, the mother died of "heart disease" from which she had suffered a year. Several brothers and sisters are living and in good health. Only one brother is dead, and his death was the result of an accident. The uncles and aunts are all living in Germany and of them nothing further is known. The patient's own family history so far as obtainable is a good one. A venereal history is acknowledged, but it is not clearly syphilitic.

He had always enjoyed good health until the middle of December, 1892, when he first observed a slight hoarseness accompanied by cough. He relates that, on a certain Sunday in December, the gang of men with whom he worked, had a keg of beer and all drank freely, and indulged in much singing and shouting. The next day he was very hoarse and thereafter his voice became steadily worse. About the middle of December he began to lose in weight, but was able to keep at work until the latter part of January, and even after that worked a day or two each week till February 20th, when he had to give up altogether. The loss in weight after the first date named was rapid, dropping from 165 pounds in December 1892, to 127 pounds on March 1st, 1893. He came to the Manhattan Eye and Ear Hospital on March 2nd, 1893. Physical examination of his chest showed advanced pulmonary lesions, and the sputa contained tubercle bacilli in large numbers. The mucous membrane of the pharynx appeared congested rather than anæmic. Examination of the larynx revealed a strictly unilateral lesion affecting the left side. This lesion con-



sisted of a rounded tumor having a smooth surface and covered by congested mucous membrane. The swelling which was of a firm consistency (as distinguished from oedema), involved the arytenoid, the aryepiglottic fold and the ventricular band, but did not extend beyond the larynx. The left vocal cord was entirely concealed by this overhanging mass, which extended nearly to the median line. At about the middle portion of the tumor and upon its median face there was a slight depression—a clear cut ulcer—and upon the anterior edge of the ulcer a single prominence of granulation tissue. The left side of the larynx was absolutely immovable. There was marked thickening in the *interarytenoid* space, and a little to the left of the median line a well defined ulcer. Except for some congestion, the right side was free from any lesion. The accompanying drawing (Fig. 1) represents the condition of the larynx when the patient first came under observation.

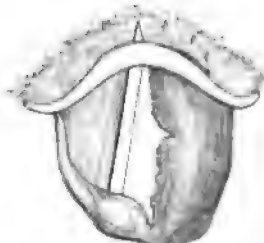


FIG. 1

Externally and upon the left side a single lymphatic gland was involved. This was situated external to the central part of the submaxillary gland, and, although small, was of almost stony hardness. It remained unchanged in form and size during the period the patient was under observation.

As to the symptoms produced, there was no pain at any time, save in the act of coughing. Solids could be swallowed when finely divided. Liquids were swallowed without difficulty or pain. There was no tenderness upon external pressure over the larynx. The only discomforts actually complained of by the patient referable to the throat was a feeling of dryness limited to the left side; this, he said, "felt dry as a board." Of course cough was present—during the day this did not seem to trouble the patient much, but at night he said he coughed a great deal and expectorated a large quantity of mucus.—His own statement was that he nearly filled an ordinary cuspidor each night.

The patient was able to visit the hospital for nearly three weeks. At the end of that time a very considerable change had taken place in the larynx, owing to the extension of the *necrotic* process. The ulcer in the middle portion of the tumor enlarged in all directions, and reached a sufficient depth to divide it into two parts, an anterior and a posterior. The *interarytenoid* ulcer had the appearance of being very deep—a fissure in reality, and was of a narrow V shape—its sides approximating during attempted *phonation*. The left side was covered by a thick *tenacious*, grayish secretion. There was at this time more congestion upon the right side than when the patient first came under observation, and ulceration was beginning here posteriorly.

On April 14th, the day before the patient died, the tumor upon the left side of the larynx was seen to be of less than half its original size. It was so covered by secretion—mucus, particles of food and milk which had entered the larynx and remained there, because of the patient's feeble expulsive cough, that nothing of the surface of the swelling could be seen. The right cord though still free from erosion failed to make its excursion over to the opposite side on attempted *phonation*, its arytenoid having become involved in the destructive process which extended from the *interarytenoid* ulcer.

For some days there had been constant pain in the larynx and the patient coughed almost incessantly. Even fluids were swallowed with great difficulty. The epiglottis did not close the larynx, probably because of infiltration at its base.

The larynx was removed 12 hours after death. It has shrunk considerably in size since being put into strong alcohol, and is of a darker color than when first removed.

The photograph is almost of the exact size of the original. It is interesting to note in the larynx itself, or in the photograph of the specimen, the location and extent of the *necrotic* process.

Distinctive ulceration of the mucous membrane involving, either large areas of surface, or numerous small points, which by enlarging, approach each other till they unite, extends from the lower edge of the specimen up to the epiglottis and encroaches a little upon it, on the left side. Upon the right side the process stops just below the vocal cord although posteriorly it reached to a higher level. Upon the left side also the destructive process has extended deeply into the tissues, sweeping away in its course the arytenoid cartilage, the vocal cord and the ventricular band. Upon the right side also the arytenoid is involved.

The following is the report of Dr. H. B. Douglass, pathologist of the Hospital:

The sections prepared for microscopic examination showed the mucous membrane to be almost totally destroyed by tuberculous ulceration, being replaced by tissue in a state of true coagulation necrosis. When present it was infiltrated by tuberculous elements composed of large round epithelioid cells and lymphoid cells, and some migrated colorless blood corpuscles. In certain portions typical tubercles were present with contents partly caseous. The submucosa was diffusely infiltrated with lymphoid cells and proliferating connective tissue elements showing no disposition to caseation. The glandular tissue near the surface was infiltrated with tuberculous products and in part in a state of caseous metamorphosis glands situated in other portions of the tissue showed no deviation from the normal, aside from connective tissue proliferation in the immediate neighborhood of the membranæ propriæ. No evidence of pre-existing malignant infiltration, or other pathological changes could be determined.

DIAGNOSIS-TUBERCULOSIS OF THE LARYNX.

In conclusion I wish to express my cordial appreciation of the important contributions to this report by Dr. H. B. Douglass and Dr W. P. Brandagee, the former by his microscopical examination of the specimen, the latter by the photograph which accompanies this report.

CORK SPLINTS FOR DEFLECTIONS OF THE NASAL SEPTUM.

T. PASSMORE BERENS, M. D.

THE small percentage of good results from operations carefully performed for deflected septa by the pin, punch, bistoury, Adams' and other operations is due principally to lack of sufficient support to the septum, or to the support being applied in the wrong direction. The former is observed in the use of soft rubber tubes which are too yielding, the latter is observed in the use of hard unyielding ivory plugs or metal tubes, which are attended with so much discomfort and ulceration. The pin is painful and often insufficient. It too has the unfortunate tendency to ulceration and perforation of the septum. Plugs of oakum, cotton, and the like, have so many disadvantages that they have, so far as the writer knows, become justly a thing of the past. They were dirty absorbents of secretions, rapidly becoming foul and necessitating the discomfort of mouth breathing. The clamp could not be worn long enough to prevent a recurrence of the deformity. All of the methods in use except the pin, require frequent disturbance of the septal supports, thus often, if not always, interfering with the position of the septum and delaying union of the parts. To overcome these evils as far as possible, splints made of cork were prepared in the following manner: a selected cork, (pint bottle size) in average length, one and one-quarter inches, in breadth at its broad end three-quarters of an inch, at its narrow end one-eighth to one-quarter of an inch less, in thickness from one-quarter to three-eighths of an inch, is whittled to the shape of an almond with the point cut off, and flattened on the side that is to lie against the septum; the opposite side near its lower border is slightly grooved for the reception of the inferior turbinate body. A nasal burr or trephine is now used to hollow the splint, leaving the shell one-sixteenth to

one-eighth of an inch thick. A rat-tail file, small-bladed knife or red-hot metal may also be used for this purpose. Sand-paper is used to smooth both the inner and outer surfaces, and the whole splint is then coated with flexible collodion, to which has been added iodoform in the proportion of thirty grains to the fluid ounce. Allowed to dry, it is ready for use. The making of splints requires no especial mechanical skill and they can be modified with ease to suit the peculiarities of each case. They are sufficiently firm to support the septum, while possessing the advantage of enough elasticity to allow of free circulation of the blood, impervious to moisture, light, durable and very easily cleaned even without removal from the nares. In hospital practice the cheapness is a decided consideration, and for emergency cases of "broken nose" the ease and quickness of manufacture render them accessible to every practitioner. The operation should be performed under the influence of a general anæsthetic. The posterior nares are then tamponed, any adhesions between the septum and wall of the nose or turbinate bodies are then divided with a bistoury, outgrowths from the septum removed with saw or chisel, and the septum is then fractured with Adams' forceps. Much care should be exercised to fracture the most prominent portion of the deflection and this fracture must be complete. The cartilaginous septum should then be completely luxated from its bony attachments; this also must be complete for the reason that the direction of the deflection is largely determined by the direction of the bony attachments of the cartilaginous septum, and unless this direction be changed, the deformity will be very apt to recur. The mucous membrane should not be torn, although it is exceedingly difficult to avoid this at times. The little finger of each hand is now introduced, and the septum, if thoroughly broken, will readily be moulded to a straight line. It frequently happens that an excess of cartilage will cause a lapping of one portion over its neighbor, thus forming a "tuck." This should be encouraged, and after complete union is established, it is removed in the same manner as an ordinary shelf by saw, trephine or chisel. Before inserting the splints the

nares should be douched with hydrogen peroxide, which not only disinfects the parts but also controls the hemorrhage. The splints are now coated with benzoinol and inserted. If properly made, the splints will hold the septum in the median line, provided always that the bony framework of the walls of the nose is symmetrical. From a cosmetic standpoint, the tip of the nose should lie in the median line of the face. There is a tendency to make the nose straight while the nasal bones are pushed to one side; this would carry the tip decidedly out of plumb with the face and cause a decided deformity. The splints should rest against the septum, but should not squeeze it between themselves, as from too much pressure, ulceration and perforation might ensue. The sulcus of each vestibule is relied on for preventing the splints slipping forward. The case should be seen daily for the first few days. Any swelling of the external parts may be relieved with iced cloths. The splints, unless causing pain, are left undisturbed for a week, and cleansed with peroxide of hydrogen, followed by boric acid solution, which is in turn followed by an oily spray, preferably benzoinol. When pain is persistent, after the first twenty-four hours the tubes are replaced by smaller ones. It has been the custom to remove one tube, cleanse it and that naris from which it has been removed, and reinsert it before disturbing the splint on the opposite side, thus largely preventing any disturbance of the position of the septum. As a rule the splint occupying the previously free naris is permanently removed at the end of the second week. The remaining splint should be carried from one to two weeks longer.

A. C—, female, aged 15 years, history of injury in infancy and of having had seven operations during the three years previous to coming under the writer's care. She presented a marked deflection of the tip of the nose to the left with complete occlusion of the right naris, and firm union between the septum and wall of the nose. She was anesthetized, the adhesions divided with bistoury, the cartilaginous septum completely fractured from its bony attachments and the prominent portion of deflection thoroughly fractured; the

bleeding, not profuse, was checked with hydrogen peroxide, the septum moulded to a straight line with the little fingers, and the cork splints inserted. The splints were cleansed *in situ* and neither removed for three days, when they were removed one at a time, cleansed and reinserted, after having been coated with benzoinol. A week elapsed before a second removal, the patient having in that time been cleansed daily with hydrogen peroxide, boric acid solution, and benzoinol. At the end of the second week the splint was permanently removed from left side. The right splint was carried two weeks longer. During the whole course of the case there was no troublesome granulation or ulceration, no discomfort or pain and very free nasal breathing. Both nares were very free, the septum occupying the median line and the nose externally being almost straight. About four weeks later she was shown before the Section of Laryngology, Academy of Medicine.

A few days since, or nearly two years after the operation, there was no recurrence of deflection or deformity.

B. G—, female, aged 14 years. No history of traumatism. Mouth breather. O. M. C. C. Marked deformity externally, caused by pushing of nasal bones to the right and cartilages to the left. Septum deflected to the right and touching wall of nose for upper two-thirds; no adhesions; septal cartilage in excess. Anæsthetized, the cartilaginous septum completely fractured, as in previous case, with Adams' forceps; bleeding rather profuse but checked with hydrogen peroxide. The excess of cartilage was taken up in a tuck near floor of nose on left side and splints inserted. The left splint was made larger and heavier to draw the tip of the nose to that side. The day following there was considerable swelling on right side, relieved by cold applications. Two days later pain, rather severe, was complained of on same side and the splint on that side was permanently removed.

The patient was seen daily for two weeks with same precautions to cleanliness as in preceding case. After four weeks had elapsed, the splint was permanently removed from the right side, leaving both sides clear and having markedly improved the facial expression. Nasal breathing was already established. Ulceration of rt. inf. turb. occurred at end of second week but was slight and not treated. Two weeks after this had disappeared, an ecchondroma was present on left side near floor and parallel with it. This has not yet been removed. Hearing doubled, breathes entirely through

the nose, pharynx moist, facial expression much improved, both on account of closed mouth and much straighter nose.

Boy, aged 17 years, reported by Dr. D. L. Hubbard. Almost complete occlusion of both nares, sigmoid deflection of septum, prominent ecchondroma on left side—mouth breather with consequent dry pharynx.

Ether. Removal of ecchondroma with saw. Adams' forceps used for breaking and detaching cartilaginous septum; peroxide of hydrogen douche; inserted a cork splint in each nostril. Six days later removed splints. Seat of ecchondroma healing, but thickening. Cleansed, reinserted splints; allowed them to remain three days, when on removal the septum was found to be in good position, but seat of ecchondroma still thickening. Twelfth day same procedure but did not insert splint on left side. The patient was seen each third day for four weeks longer and nares cleansed. Sixth week the remaining splint removed permanently. Ecchondroma had returned and was troublesome. Three months later, patient much improved; breaths through nose, pharynx moist. Owing to presence of ecchondroma, the result was not entirely satisfactory.

N. N—, reported by Dr. D. L. Hubbard. Complete occlusion of right nares with marked external deformity. So complete is the occlusion, that he cannot blow smoke through the right side. Breathing impaired on left side. Breathes constantly through the mouth, with dry pharynx; superabundant cartilage anteriorly on left side. Ether; dissected off anterior end of cartilage on left side; closed wound with silk sutures. Adhesions cut through with bistoury, Adams' forceps used to fracture septum, peroxide of hydrogen douche, inserted cork splints, cleansed *in situ* until fifth day, when the splints were removed; minimum amount of ulceration and granulation tissue. Splints carried four weeks with frequent cleansings and occasional removals. Three months later, marked improvement externally, septum straight, good free breathing space, pharynx moist and nasal breathing only indulged in.

Notes of numerous other similar cases are at command, but it is considered that the above reports are sufficient to show the benefits arising from the use of tubular cork splints in correcting deformities of the nasal septum.

The quickness and ease of manufacture, the readiness with

which they can be shaped to suit the peculiarities of each case, their lightness, elasticity, and durability, their non-conduction of heat and cold, the ease with which they can be cleansed *in situ* and the length of time they can be worn without causing pain, discomfort or severe ulceration, are advantages possessed by no other similar device, and, it might be added, advantages requisite to a successful operation.

SUGGESTIONS ON THE USE OF THE GALVANO-CAUTERY.

DWIGHT L. HUBBARD, M. D.

CAUSTICS have been used in the treatment of sore throat since the early days of experimental chemistry. No sooner was there such an agent known as blue-stone than it was accepted as the cure-all for all throat disease from "canker sore-throat" to "throat consumption." Such was its universal acceptance that not only was it used for all throat disease but was said to exert different and varied effects according to the form in which it was exhibited, therefore it was gargled, brushed, swabbed, applied by the solid stick and snuffed up in powder form, which last method was said to be good for all forms of catarrh. Nor are we obliged to go back very many years to find this crude way of treating these diseased conditions. It is within the memory of every physician under forty years when the caustic treatment was the treatment for sore-throat.

An elderly practitioner whom the writer remembers very well, who gloried in a wide reputation as a surgeon in particular, and, as a very successful practitioner, had always at hand three solutions of nitrate of silver of varying strengths, into one of which the same brush went and then into the throat of every patient who had the fortitude to mention that sore-throat was a symptom. The above serves to illustrate the very crude condition of the treatment of these affections, and compared with the well understood and scientific methods of to-day, shows the wonderful advance in this one department.

But must we criticize these old methods too severely or give them our unreserved condemnation? It seems that the difference then and now is that in those days the remedy was discovered through experiment and used empirically, while to-day we understand more accurately the pathological condi-

tions and then intelligently choose the remedy giving us more or less certainty of the results to be obtained. Nitrate of silver has not and must not be discarded from our therapeutic armamentarium. We are now sure that in the old days, especial attention was given to the effects of the diseased conditions and they alone were treated, while in these days we understand more clearly the relation of effect to cause, and apply our remedies to the latter. Nevertheless, long ago, catarrh was supposed to be a nasal affection as well as a throat disease, and it would seem that only the utmost stupidity prevented a recognition of the causes leading to pharyngeal and laryngeal affections.

I have mentioned nitrate of silver as the type of the old-time caustics. The use of the agent still remains effectively in vogue. Others have been added and they are many. On the theory that if little was good, much was better, nitric and other powerful acids have been added to the list, including chromic, mono- and tri-chloroacetic and glacial acetic, and, not the least powerful and effective, the actual cautery. I say that these have been used on the theory that if little was good, much was better. In making the statement, I refer to the very unskillful use to which they are very commonly put, and the theory above named, seems to be the only one which could have been used. But with a scientific knowledge of the conditions requiring their use, and skillful dexterity in applying them, there are no more effective agents for the relief of certain conditions than these.

In this contribution I wish to speak particularly of one already mentioned, the actual cautery. The use of this is nearly if not quite as old as the use of nitrate of silver. It has been much more abused. Properly used, it may be considered our most valuable caustic agent.

In a recent work on diseases of the throat and nose published in 1889, I find the use of the steel probe heated in the flame of an alcohol lamp, highly recommended for cauterizing the follicles in follicular pharyngitis. If such crude methods must in these times be resorted to, they had better be left alone. Such a use of the agent is nearly as unscientific

as the introduction into the nose of a Paquelin cautery point of the size of a laryngeal mirror handle, and a cherry heat turned on, as was done in a case which came under my care some two years ago.

I would not sanction any actual cautery not produced by a galvanic current and under complete control by a rheostat. Not only the proper apparatus for the production of the heat, but a proper point with which to apply it, is an equal necessity. Granted a thorough knowledge of the conditions to be treated, we have now at our command an agent through which may be called forth the most splendid results. I should use the galvano-cautery throughout a range whose strength varies as the zephyr and the hurricane; as a stimulant to excite glandular activity and as a destroyer of neoplasms. Without going through the routine of case reporting, I wish to speak of a few of the conditions in which this agent has been used successfully many times, particularly those conditions in which much harm may be done by its unskillful use. In hypertrophic rhinitis, particularly in those cases in which there is not so much bony hypertrophy as to require surgery as where there is much hyperplasia of soft tissue resulting from vaso-motor paresis, it has been the custom to remove much of this tissue with snare or with nitric, chromic or other acids, thereby destroying much useful tissue and hastening a condition worse than the first. Where these tissues do not respond readily to cocaine, I would, with a sharp-edged cautery blade, with a heat just short of white, draw quickly postero-anteriorly a line deeply into the tissue throughout the extent of the hyperplastic body, dividing it, as it were, into upper and lower portions. This should be done in such a manner that no bleeding follows. By this method very little or no inflammation is aroused, and all that can be obtained by the pressure treatment is accomplished and a minimum amount of tissue destroyed. The disturbance caused by radiated heat should be guarded against by the previous use of a protective spray of oil. *

In thickening of the mucous membrane on portions of the septum, it has been said that the cautery should never

be used, as the wound heals poorly. In such thickenings of this membrane where the tissue is in close apposition to the middle turbinated body, and in which the latter is not hypertrophied, I would cut one or two incisions into the tissue, thereby causing a cicatrix to form and a consequent complete withdrawal of the tissue from the middle turbinated. Such slight linear incisions heal very readily and accomplish the two results desired, free breathing space and good drainage.

The polypoid degeneration of the middle turbinated where the body is not sufficiently enlarged to impinge upon the septum and no polypoid growths are present, the cautery point may be used with advantage. Merely penetrate the very soft tissue in one place at a sitting, thereby partially cutting off the circulation through the subsequent constringing of the tissues.

In atrophic rhinitis I would seldom use the cautery point on ulcerated surfaces, as is commonly done. The result sought is better obtained by mild solutions of nitrate of silver, the same principal being used to promote healing by granulation as is used in ulcerated surfaces elsewhere. For the reduction of granulations which may arise after operations on the septum, the galvano-cautery is the most effective means. Simply cutting these off and stopping hemorrhage is ineffective. The application of caustic acids is long and tedious. In the granulations we have a tissue which it is best to destroy. The flat side of the cautery blade should be placed against the granulated surface and heated to a dull red for a time sufficient to destroy the circulation in the part, and, at the instant of removal from the tissue, the heat should be raised quickly to nearly white heat by an assistant manipulating the rheostat. In this way the blade is detached from the tissue with ease, leaving a thoroughly seared protecting scab over the surface. It is rarely necessary to repeat this procedure as there is seldom any return of the granulations.

Tonsils requiring the use of the galvano-cautery are comparatively rare, but when there is a general hypertrophy without degeneration it seems to be very effective. The points most

worthy of notice are the following: The flat surface of the blade should never be used, for it destroys more of the tissue described and produces a very sore throat, making deglutition very painful. A better way is to apply the blade while it is just on the point of becoming white and at the height of its cherry glow. It should be introduced horizontally, point first, and made to cut completely outward, thus avoiding the possibility of a point of burrowing pus. A small surface is destroyed, and the partial lessening of vascularity gained. It is not the object in such cases to destroy tissue.

One final injunction is important. Never remove any slough caused by cauterization until it is completely separated.

Although the range is wide in which the use of galvanocauterization is valuable, the few illustrations given show what the writer believes to be the true principles of its use. One devoid of mechanical dexterity had better let it alone. Regarded as one of our best remedial agents it ought to have an important place.

REPORT OF A CASE OF TORTICOLLIS FOLLOWING ADENOTOMY.

J. F. McKERNON, M. D.

T. T——, girl, aged nine years, was brought to the Throat Department of the Manhattan Eye and Ear Hospital for treatment by her aunt on April 13th, 1893, giving the following history:

For the past two years she had noticed that the girl was very pale; always slept with her mouth open; snoring loudly at night, and at times would have a fit of coughing in her sleep, which would cease only upon awakening and changing her position. Noticed also at times that when spoken to she could not hear as well as formerly. Was irritable and had lost flesh and strength.

Upon examining the anterior nares, both chambers were found completely filled with a semi-fluid secretion, giving forth an unpleasant odor.

The pharynx in the tonsillar region was well filled, both tonsils being much enlarged, so much so that it was very difficult to make a post rhinal examination with a No. 1 mirror.

After repeated attempts at an examination, a small glistening, rather whitish mass of tissue was seen in the pharyngeal vault, well anterior. A diagnosis was made and entered of Amygdalitis chronic hypertropic and adenoids of vault of pharynx.

Upon being told the cause of the child's condition, the aunt requested the removal of the growth. An appointment was made for operation on the 15th, two days later, but the patient failed to put in an appearance, and nothing more was seen of her until November 9th, when she again appeared with her aunt, who wished the operation performed.

At this time upon examining her, the tonsils were found in about the same condition as before, but above and hanging down as low as their superior surface, was a large mass of firm looking, glistening tissue. As it presented itself, its lower border extended about one-fourth of an inch below the inferior border of the soft palate, was rounded anteriorly and laterally, completely filling the space behind the soft palate.

Upon touching it with the finger it seemed quite firm, and at first it was thought that its anterior surface was adherent

to the posterior surface of the soft palate, but upon passing a blunt probe along this surface it was found that there were no adhesions existing between the two.

Several of the members of the staff examined it and were divided in their opinion as to the nature of it, some thinking it was a fibro-adenoma; others, that it was malignant in character, while others thought it purely adenoid tissue.

After removal of a small portion with the cutting forceps for pathological examination, both tonsils were removed with the Mackenzie, no ether being used during their removal, the patient sitting in an upright position the meanwhile. It was now thought best to remove the pharyngeal growth at a subsequent sitting, so the patient was given a gargle and told to return in two days for its removal.

Returning November 11th, two days later, she was placed under ether, and before beginning removal of the mass, it was traced with the finger well anterior to the posterior end of the septum. The finger was then passed along either side of its attachment to the pharynx, trying if possible to dissect it from its base, but the attachments were so firm that this had to be abandoned.

The Gottstein curette was now passed well anterior, but some difficulty was experienced in doing so on account of the small space existing between the growth and the soft palate.

After making two sweeps with the curette it was removed, and at the same time a portion of the mass about as large as that part of the little finger extending beyond the last metacarpal joint, beside other small portions which came away when the patient's pharynx was emptied of the blood, etc., due to the cutting.

The finger was now passed up into the vault to ascertain if it were all removed, and it was found well cleared anteriorly, but there was still a portion remaining on the posterior pharyngeal wall situated low down.

Reintroducing the Gottstein a second time, an attempt was made to remove the remaining portion, using as was thought at the time only a moderate degree of force, certainly no more than had been used in former times while doing the same operation in the vault. After removing another portion of the growth, the finger was introduced again and the posterior pharyngeal wall now seemed clear.

Dr. F. E. Hopkins, who was present, was requested to examine with the finger, which he did, and remarked after examination, that he thought the growth now all removed.

There was only the usual amount of hemorrhage accompanying an extensive adenotomy.

The patient was then taken up stairs to bed; ordered gargles and fluid diet, as usual after operation in such cases. She was not seen again for thirty six hours, and then much to my surprise I found her with the head well turned so that she was looking over her right shoulder, the neck being twisted also to the right side. Upon inquiry I found that this change had begun to take place in about twenty hours after the operation. There was no distinct contraction of the sterno-mastoid, or any of the the other muscles, simply a twisting of the head and neck to the right side with a moderate amount of swelling of the muscles on either side of the back of the neck in the lower cervical region. The head could be turned back to the median line, and also from side to side without giving the slightest pain, but after bringing to the median line and letting go, the head slowly turned so that it looked over the right shoulder again. Extreme flexion elicited no pain, but upon extreme extension the child said she felt pain in the back of the neck on the left side of the vertebral column; temperature at this time being $99\frac{1}{2}^{\circ}$, pulse 112.

An inspection of the pharynx now showed a small portion of the mass in the right side, low down, still intact, which the curette had slipped over, probably owing to its firm attachment and the lowness of its situation, as when the blade of the curette was in this region the handle was in contact with the upper teeth, thus arresting the further sweep of the instrument.

Upon this remaining portion of the mass was an extensive slough giving a foul odor. Among the gentlemen present, who now examined the patient, were Drs. Chas. H. Knight and Morris J. Asch and other members of the staff.

Several theories were advanced as to the causation of the torticollis; among others it being said that the patient might have had a masked form of necrosis or caries of the vertebrae in this region. Another was that too much force had been used in removal of the mass. Another that it was malignant in its origin, and still another was that the attachments of the scalenii might have been disturbed. It was also thought there might have been some abnormality in muscles or nerves in this region.

Dr. Terriberry, attending neurologist to the Hospital was now called in to see the case, and after reviewing the history

and examining the patient said he believed the condition was purely a reflex one.

At his suggestion, counter irritation mildly applied over the back of the neck, consisting of mustard poultices and later, alternating with cloths wrung out in hot water was used.

Internally a combination of potassium bromide and chloral hydrate in the proportion of eight grains of the former to three grains of the latter was given every four hours in water. Fluid diet was still continued and an antiseptic spray used in the pharynx every two hours.

The following day there was practically no change in the condition of the patient; temperature 99, pulse 108. The next day she seemed brighter, though no change perceptible in the position of the head and neck. The pharyngeal mass still remaining was somewhat contracted, and there was less odor than at any time since the operation. Temperature 98.4, pulse 98.

Again at Dr. Terriberry's suggestion the quantity of bromide and chloral was increased to fifteen grains of the former, and four of the latter every four hours; counter irritations and gargles as before.

On November 17th, two days later and one week after the operation, it was noticed that the head was gradually coming toward the median line. There was less fullness of the muscles in the posterior cervical region; no pain on pressure at any point and extreme extension was not painful; remains of pharyngeal mass contracted still more; very little slough and little or no odor.

From now on up to the ninth day a steady improvement was noticed, so that at this time the head had returned to its natural poise, all fulness having disappeared from the muscles in the posterior cervical region, and no tenderness or pain at any point.

The remaining portion of the pharyngeal mass had now contracted so as to be scarcely perceptible on inspection. All external and internal treatment was now discontinued, with the exception of the gargle, and the patient was sent home with instructions to report at the Hospital twice a week, which she has done, and at the present writing has gained in flesh and strength. Her hearing has improved, she has had no more attacks of coughing at night, and does not snore.

As no previous neurotic history could be obtained from the patient or her family, I believe the cause of the temporary

torticollis to have been due to the removal of that portion of the mass situated low down in the pharynx, for here we cannot use the same degree of force we ordinarily do in operations higher up, or in the vault.

In closing I wish to call attention to the very rapid growth that took place in this adenoid tissue and the size which it had attained from April 13th, the time when the patient was first seen, to November 9th, when it was removed.

The report of the pathologist shows the mass to have been made up of purely adenoid tissue.

I wish to tender my thanks to Dr. Morris J. Asch, the senior surgeon, for his courtesy in assigning to me this case for report.

Throat Department

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“ “ Cleft of	6
“ “ Papilloma of	1
“ “ Paresis of (Post-Diphtheritic)	5
“ “ Perforation of	3
“ “ Ulceration of, Syphilitic	4

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DISEASES OF THE LARYNX, TRACHEA, OESOPHAGUS, AND EXTERNAL PARTS.

Abscess, Cervical	1
“ Mental	1
Adenitis, Cervical	19
“ Sub-Maxillary	6
“ Sub-Mental	1
“ Suppurative	1
Aphonia, Functional	6
Articulation, Imperfect	2
Asthma	3
Bronchitis, Acute	4
“ Chronic	3
Bronchocele	11
Cellulitis of Lip	1
Glossadenitis	8
Herpes Labialis	1
La Grippe	1
Laryngitis, Acute	24
“ Chronic	52
“ Follicular	3
“ Sub-Acute	58
“ Syphilitic	5
“ Tubercular	28
Larynx, Anchylosis of Crico-Aryt Articulation	7
“ Carcinoma	1
“ Catarrh, Chronic	8
“ Chorea	1
“ Foreign Body in	2
Larynx, Papilloma of	5
“ Stricture	1

Maxilla, Necrosis of, Syph.....	3
Oesophagus, Foreign Body in	1
" Stricture of.....	5
Torticollis.....	6
Tuberculosis, Pulmonary	5

OPERATIONS.

NOSE AND RHINO-PHARYNX.

For Adenoids in Rhino-Pharynx, Forceps.....	113
" Deflected Septum, Adams' Operation, modified....	1
" " " Asch's " 	2
" " " Bistoury and Saw.....	17
" " " Electro-Trephine	4
" " " Forceps and Cork.....	4
" " " " " Nasal Tube	4
" Division of Synechia	10
" Ecchondrosis of Septum, Bistoury.....	10
" " " " Electro-Trephine.....	30
" " " " Forceps	3
" " " " Galv. Caut	10
" " " " Saw.....	46
" Exostosis of Septum, Electro-Trephine.....	15
" " " " Forceps	2
" " " " Saw	31
" " " Superior Maxilla, Rouge's Op.....	1
" Hypertrophy of Inf. Turb., Forceps	3
" " " " " Galv. Caut,.....	20
" " " " " Saw	2
" " " " " Scissors.....	2
" " " " " Snare.....	14
" " " Mid. " Forceps.....	20
" " " " " Galv. Caut	3
" " " " " Saw	2
" " " " " Scissors.....	8
" " " " " Scissors and Snare.....	9
" " " " " Snare.....	18
" Myxomata of Nose	26
" Necrosis of Nasal Bones, Hard Palate, etc	1
" Foreign Body in Nose.....	8

MOUTH AND PHARYNX.

For Abscess, Circumtonsillar	6
“ “ Tonsillar.....	2
“ Adenoids at base of Tongue.....	7
“ Adhesion of Velum Palati	2
“ Foreign Body in Pharynx	2
“ Carcinoma of Pharynx	1
“ Hypertrophied Tonsils—Bilateral Excision	66
“ “ “ —Galv-Caut. Excision	5
“ “ “ —Galv-Caut. Puncture	10
“ “ “ —Unilateral Excision	30
“ Papilloma of Uvula.....	2
“ Ranula, Incision.....	2
“ Sarcoma of Pharynx	1
“ Adhesion of Anterior Pillar to Tonsil	2
“ Uvulotomy	7

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LARYNX AND UNCLASSIFIED.

For Abscess Alveolar.....	1
“ “ of Parotid	1
“ “ Periosteal over Nasal Bones	1
“ “ Prethyroid.....	2
“ Cyst of Epiglottis.....	1
“ Foreign Body in Œsophagus.....	1
“ Lipoma Superior Maxilla.....	1
“ Necrosis Inferior Maxilla.....	1
“ Puncture of Antrum.....	1
“ Tumor of Neck, Branchial Cyst....	1
“ Tongue-tie.....	1

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RECAPITULATION.

Diseases of Larynx, Trachea, Œsophagus and External Parts.....	284
Diseases of Mouth and Pharynx.....	784
“ “ Nose and Accessory Sinuses.....	2,058
	3,126
Operations in Larynx and for various conditions	12
“ “ Mouth and Pharynx	144
“ “ Nose and Rhino-Pharynx.....	438
Total Operations.....	594

SOME CLINICAL NOTES ON EIGHT CASES OF
EXOPHTHALMIC GOITRE. (GRAVE'S DISEASE.
MORBUS BASEDOWII.)

J. ARTHUR BOOTH, M. D.

(*Illustrated.*)

SINCE the first description of this disease over fifty years ago by Graves of Dublin, its characteristic features and etiology have attracted universal attention and discussion: but notwithstanding the mass of literature on the subject, we do not yet possess proofs as to the true pathology of the affection.

The disease is recognized by its three striking symptoms, namely: persistent increase of the frequency of the heart's action, enlargement of the thyroid body, and prominence of the eyeballs. Besides these we generally find other symptoms; tremor, flushing of face, anæmia, irritability, anxiety, dyspnoea, etc.; which are often common in other pathological conditions, and therefore are not to be considered as special features of the disease. All the cases do not give the three typical symptoms, but presenting different forms or combinations of the same, may be conveniently classified as follows:

(A)—The three cardinal symptoms are present and we find a pulse rate from 100 to 150, marked enlargement of the thyroid and exophthalmos.

(B)—One of the events in the symptomatic triad may be wanting: the prominence of the eyes being the one generally absent.

(C)—Two of the symptoms may be absent: usually the eyes and neck do not present any abnormal signs.

The following cases consulted me in the Nervous Department of the Manhattan Eye and Ear Hospital, and serve to illustrate the above classification:



slight exertion—she became very pale and lost considerable flesh.

One year later the cardiac symptoms increased, had frequent flushing of the face and then noticed prominence of the eyes. Three months later the neck became increased in size. Patient seems to be easily thrown into a state of mental excitement.

Examination.—Face flushed. Is very nervous and anxious. Tremor of hands quite marked. Pulse 120. Temperature 100 $\frac{3}{4}$ °. Heart apex somewhat diffused, maximum intensity fifth space, just below the nipple. Over apex and transferred to the axilla, there is a soft systolic murmur. Both eyes are prominent, the right more so than the left. Graefe's sign also present. The thyroid enlargement is very noticeable, the right lobe being the larger. Circumference of the neck 13 inches.

Treatment.—Galvanism, Aconitia, Rest.

February 1. Pulse taken three times a day shows an average of 100. Sister states she is more excitable and irritable.

February 20. Has not attended the clinic regularly. Pulse 120. Patient is very nervous. Complains of headache and dizziness. Analysis of the urine shows a trace of albumen and hyaline casts.

March 3. Patient being unable to attend regularly as requested, all special treatment is abandoned. She now complains of a sudden giving out of the legs. After such a collapse she is perfectly able to rise and walk away.

April 13. All the symptoms became more severe. She had an attack of Mania and died. No autopsy could be obtained.

CASE No. 3. William C——, aged 35. Married. Engineer. October 14, 1889. No history of nervous trouble in the family. When a child had chorea, but with this exception enjoyed good health up to the date of the present illness. No specific or rheumatic history. Digestion has always been perfect. Four years ago first noticed prominence of the eyes, and a few months later was troubled by palpitation of the heart and shortness of breath, especially after going up stairs. Two years ago his neck increased in size. Lately all these symptoms have increased in severity. He is now very nervous, has much dyspnoea and is unable to sleep. Within the past two months the hands have become tremulous. No headache or neuralgic pains in the legs.

Smokes and chews tobacco to excess. Bladder functions normal.

Examination.—There is marked enlargement of the thyroid gland. The neck measures 14 inches. Both eyes are prominent and the upper lids do not follow the movements of the eyeballs in a downward direction. Pupils and fundi normal. Pulse 160, small and of high tension. Temperature 100. There is a loud systolic blowing murmur, heard over the aorta, subclavians, carotids and whole thyroid region. The hands are very tremulous. Knee jerks high. Galvanism to be applied three times a week and patient is to take three pills of Aconitia ($\frac{1}{100}$ of grain) each day.

October 18. Has taken medicine faithfully. No tingling in the tongue, lips or extremities. Pulse 120. Temperature 100 $\frac{3}{4}$ °. To lie down as much as possible.

October 20. Condition about the same. States he is not so nervous. Pulse 120. Increase pills to four a day. Is also receiving galvanism daily.

October 23. Felt numbness in the fingers last night. Pulse 112. Temperature 99°. Patient is much quieter and is sleeping better at night.

October 28. Has not felt so well in two years. Pulse 96. Temperature 98°. Eyes are not so prominent. Reduce pills to three a day. To take 15 grains of Iodide of Potash three times a day.

November 1. States there is more room inside his collar than ever before. Neck measure 13 $\frac{1}{4}$ inches. Pulse 100. Temperature 99°. Continue treatment as before and in addition Ferrum redactum, Quin sulph, of each one grain, Acid Arseniosum $\frac{1}{20}$ grain t, i, d.

November 20. Is much stronger. Sleeps well. Pulse 80. Is not troubled now by shortness of breath and is not annoyed by palpitation, even after his day's work. No further diminution in prominence of eyes or in size of neck.

December 14. Patient has remained as well since last note. There is but little or no tremor in the hands. Pulse 86. Patient has obtained a position some distance from the Hospital and gives up further treatment.

(B)—CASE No. 4. Alfred G——, aged 40. Married. Carpenter. Referred by Dr. Webster, January 29, 1892.

There is no history of goitre or any nervous trouble in the family. With the exception of several mild attacks of rheumatism, he has never had any serious illness until the spring of 1891, when he had peritonitis. It was shortly after this

that he commenced to have a good deal of headache, chiefly frontal and through the temples, and then he noticed the gradually increasing prominence of his eyes, and was also troubled with palpitation of the heart after slight exertion. He has never received a fright, fall or blow of any kind, and there is no history of specific infection. Stomach functions normal, no vomiting or diarrhoea. Been married 17 years. No children.

Examination.—There is a marked protrusion of both eyes, the left being the more prominent. Thorough examination does not reveal any enlargement of the thyroid, nor has the patient noticed at any time the least abnormal prominence in this region. The pulse is 120 and of high tension. Cardiac dullness is increased but no murmurs are present. No paresis of ocular muscles. Pupils equal, responding well to light and accommodation. Graefe's symptom is not present. Hands and fingers steady, no enlargement of the joints. After walking across the room a few times, he feels prostrated and perspiration breaks out all over the body. Pulse now 140. The analysis of the urine does not show anything abnormal.

As the patient resided quite a distance from the city, he did not receive any regular treatment.

October 22, 1893. In reply to a recent letter of inquiry for information as to his present condition, he writes that his symptoms are about the same and states that there is no enlargement of the thyroid.

CASE No. 5. Dora R—, aged 17. Housekeeper, U. S. November 23, 1888. No neurotic family history. She has never had any serious illness and remained perfectly well up to two years ago, when she became quite nervous, and had frequent flushing of the face, always accompanied by headache, chiefly frontal and over the eyes. Has never had any eye trouble. No history of vomiting or diarrhoea. First menstruation occurred when 11 years old and has remained regular ever since. Patient does not remember having received a fright or mental shock of any kind.

Examination reveals a slight but distinct enlargement of the thyroid gland, the right lobe being prominent. The eyes and co-ordination of the same are normal. The pulse is 120, weak and intermittent. A loud venous hum is heard over the carotids and thyroid body, but no organic murmur is discovered. There is an area of extreme tenderness over the second and third cervical vertebrae with referred sensations in

the forehead. Ordered Tincture Digitalis five drops every four hours. Patient is to have galvanism applied every other day. Blister placed on back of neck.

November 28. Tenderness of spine and referred sensations to forehead entirely disappeared. Pulse 120, stronger and no beats lost.

December 8. Condition unchanged. Increase digitalis to ten drops.

December 15. Patient only comes once a week. Galvanism stopped. Pulse 114.

CASE No. 6. Emily F——, aged 22. Married. June 15, 1890. All members of the family are healthy and have had no nervous disorders of any kind. There is no history of mental shock, but she has had a good deal of trouble with her husband and is now divorced. Married three years and has one child. Menstruation has always been regular. Digestion has never been otherwise than good. The patient dates her present trouble from an attack of rheumatism which she had in January last, as shortly after this she was annoyed by frequent attacks of palpitation and shortness of breath. Three months ago first noticed an increase in the size of her neck. No disturbance of vision.

On inspection the thyroid body is much enlarged, both lobes being equally involved. There is no exophthalmos and all movements of the eyes are perfectly performed. The pulse is 140, and after lying down ten minutes 136. There is a fine rhythmical tremor in the fingers of both hands.

(C)—CASE No. 7. Annie F——, aged 20. Single. German. July 14, 1890. Patient gives a neurotic family history: Father died of paralysis and mother has recently had an attack of hemiplegia. Two sisters suffer from headache. When 14 years old had a severe fright from fire in the house, and ever since then has been nervous and excitable. Menses appeared seven years ago, but have never been regular. Remained in fairly good health until last January, when she had frequent attacks of vomiting and diarrhoea, followed by much prostration, palpitation of heart, shortness of breath and flushing of face. Although there has been no return of the vomiting and diarrhoea during the past four months, the other symptoms have remained, and she now has tremor of the hands, which is sometimes so severe as to prevent her writing or sewing.

There is no enlargement of the thyroid and no exophthalmos. The pulse is 160. A loud bruit is heard over the vessels of the neck, and on palpitation a distinct thrill is imparted to the hand. No murmur directly connected with the sounds of the heart is discoverable. The patient is slightly anæmic, but not sufficiently so to account for the conditions present. The hands are moist and tremulous; the face flushed. Temperature 100. Examination of lungs negative.

CASE No. 8. Rosa D—, aged 18. Single. Cashier. German. October 28, 1892. No history of any hereditary nervous trouble. Both parents living and healthy. She has always been of an excitable disposition and easily worried over trifles. When a child had scarlet fever, measles and whooping cough. In her fourteenth year she was much frightened by the appearance of menstruation, not having been informed as to this function. Her periods have been regular, but she generally suffers a good deal of pain. One year ago she commenced to have attacks of palpitation, with shortness of breath, flushing of the face and a tendency to perspire easily. Within the past three months she has been compelled to give up her position, as the above symptoms have become more constant and severe. At night sleep is disturbed by the palpitation and throbbing in the neck, and she is often suddenly aroused by a sensation of smothering. It is quite difficult for her to compose herself or to keep quiet for any length of time. There is no evidence of any affection of the thyroid or eyes. Pupils are dilated, responding well to light and accommodation. Fundus normal. When asked to stand and close her eyes, the face becomes flushed, perspiration breaks out and there is a general nervous trembling of the whole body. The pulse is 148. Temperature 99°.

October 15, 1893. A relative informs me that the patient returned to Germany shortly after visiting the Hospital, and that she now has prominent eyes and goitre.

SUMMARY.—Of the eight cases, two were males and six females; a proportion of three to one. Five were married and three single. The age varied between the two extremes of 17 and 40 years. Three gave a history of fright, two of rheumatism and two were anæmic. The three cardinal symptoms were present together in three; exophthalmos and tachycardia in one; thyroid enlargement and rapid heart in two; cardiac involvement alone in two. The temperature was above the normal in four (99–100½°). The movements of the lids

did not follow those of the globe (Von Graefe's symptom) in three. Tremor was a prominent symptom in five. Only one gave the history of having had vomiting and diarrhoea, which commenced in the commencement of the illness and was not present while under observation. General nervousness and mental excitability were noticed in five of the cases.

DIAGNOSIS AND PROGNOSIS.—When the three phenomena are present, one is not liable to mistake this disease for any other. The difficulty of diagnosis arises only in certain cases, in which the disease is not fully developed, where we find a forcible and rapid action of the heart, and absence of goitre and exophthalmos. Under these circumstances: the character of the pulse, one of high tension, its constant high rate, varying between 100 and 140, the slight rise in temperature without known cause, flushing of face, nervousness and tremor, and the patient a female, whose age is under 30; even here one should be suspicious and consider the probability of Graves' disease.

Judging from the figures given by careful observers and from my own experience, the prognosis as to a cure is discouraging. The patients are partly liable to die from heart failure, and also seem more prone to die from other causes, apparently unconnected with the trouble, and of those who do not die, quite a large number do not lose the disease completely.

ETIOLOGY AND PATHOLOGY.—Various theories have been advanced by a number of the different authors, but none are entirely satisfactory. The cause has been attributed to recurrent irritation of the cervical sympathetic, to paresis of the vagus, to lesions of the myocardium or cardiac nerves or ganglia and to a central nervous lesion. Before the Neurological Society, March 7th, Dr. William H. Thompson advanced the theory that a specific disorder of intestinal digestion was the primary factor in the genesis of the affection. In my experience diarrhoea is not a frequent symptom and of the eight cases above reported, in only one was there any disturbance of the intestinal tract.

The pathological anatomy of the subject is still and a few published autopsies show the most varied results from which no safe deductions can be drawn.

TREATMENT.—Our want of knowledge concerning the etiology of the affection, necessarily makes the treatment difficult

and unsatisfactory. Nevertheless, by perseverance and strict attention to detail, by placing the patient under the best hygienic conditions and by the daily application of galvanism much can be accomplished towards mitigating the intensity of the symptoms, and in a certain number of cases, a cure may result. In Graves' disease, as in many others, the co-existing disorders claim attention and should be treated accordingly, for, if not causative, they probably influence the persistence of the affection.

The treatment generally adopted by the author, and already outlined in the cases just reported, consists of (a) Rest, (b) Aconitia and Potassium Iodide, (c) Galvanism, (d) The question of Thyroidectomy should also be considered.

(a) Rest.—The patient should lie down in a loose fitting garment from two to four hours daily, and when possible, absolute rest in bed from four to six weeks should be insisted on. In two cases seen in private practice this plan was faithfully carried out and was an important factor in influencing the good results obtained.

(b)—The value of Aconitine in Basedow's disease was first pointed out by Dr. E. C. Seguin in 1884, and in recent contributions and discussions he has emphasized the good results obtained from its use. In the majority of cases we find a normal heart with a rapid and small pulse of high tension, and it is in this class of patients that the drug is of benefit by both reducing the pulse rate and arterial tension. It may be given in the form of granules of one two-hundredth of a grain, one pill twice a day and then gradually increased up to six or eight.

Iodide of Potassium in 10 to 15 grain doses three times a day is also frequently of service.

(c)—Galvanism. This should be applied at least once a day, and by the physician himself. The electrodes should be three in number, one with a flat sponge three inches in diameter, and two round sponge electrodes, each one and a half inches in diameter. The sponges having been well moistened with warm water, proceed as follows:

First step.—Place the flat sponge (cathode) over the seventh cervical vertebra and the round sponge (anode) in the auriculo-maxillary fossa, then turn on slowly a current of four to six milliamperes. After four minutes stable application, gradually draw the anode up and down the lower border of the sterno-mastoid muscle, for two minutes.

Second step.—Place the cathode over the goitre and the anode in the region of the solar plexus.

Third step.—One round sponge electrode to be placed on each side of the neck and the current then to be passed transversely through the goitre. The duration of the entire séance should be about eighteen minutes; six minutes for each step. Weak currents are preferable to strong and generally a current strength of four to six milliamperes will be sufficient.

(d)—Thyroidectomy. Recently the German surgeons have reported a number of cases cured by the partial removal of the thyroid, and in one case simple division of the isthmus has produced a marked improvement in all the symptoms. Dr. James J. Putnam (*Journal of Nervous and Mental Diseases*, December, 1893) contributes an interesting and impartial review of the entire subject. In his summary of 51 cases, there were 4 deaths attributed to the operation, 18 cured and 14 greatly improved.

It is too soon at present to recommend the operation as a routine practice, but if, after a fair trial of electricity and internal medication, the symptoms should still persist, then thyroidectomy should be tried.

Report of Nervous Department.**DISEASES OF THE BRAIN.**

Aphasia.....	2
Cerebral Endarteritis, Syphilitic	1
" Syphilis.....	1
" Tumor	5
Cerebro-Spinal Syphilis.....	1
Dementia	1
Hemiplegia.....	10
" Double	1
" Infantile	1
Idiocy.....	1
Imbecility	3
Meningitis	1
" Specific	1
" Tubercular.....	1
" Cerebro-Spinal Syphilitic	1
Retarded Development.....	2
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DISEASES OF THE SPINAL CORD.

Myelitis, Polio, Anterior	3
Sclerosis of Lateral Columns	2
" Posterior Spinal	14
	<hr/>
	19

DISEASES OF THE PERIPHERAL NERVES.

Atrophy of the Optic Nerve	3
" " " " Double.....	6
Deafness from Meningitis.....	2
Hemianopsia (Chiasm-lesion)	5
Mydriasis.....	4
Neuritis of Brachial Plexus, Syphilitic	1
" Multiple.....	1
Neuro-Retinitis	1
Ophthalmoplegia Externa.....	1
" " " et Interna.....	1
Paralysis of Extensor Secundi Pollicis	1
" " Musculo, Spinal.....	2
" " Pharynx, Diphtheritic.....	1
" " Right Circumflex Nerve (birth).....	1

Paralysis of Seventh Nerve.....	17
" " Sixth " 	5
" " Sixth and Seventh Nerve.....	1
" " Third Nerve.....	7
Partial Paralysis Third Nerve (Ciliary Branches)....	2
" " " " Rectus Internus.....	1
Paraplegia, Injury to Sacral Plexus in Labor.....	1
Professional Paresis.....	1

FUNCTIONAL NERVOUS DISEASES.

Basedow's Disease.....	3
Blepharospasm.....	3
Cephalalgia.....	28
Chorea, General.....	23
" Habit.....	2
" Unilateral.....	2
Eclampsia.....	1
Epilepsy.....	25
" Jacksonian.....	2
" Sensory.....	1
Gastralgia.....	1
Hypochondriasis.....	2
Hysteria.....	14
Hysterical Blindness.....	1
" Aphonia.....	1
" Œsophageal Stricture.....	1
Insomnia.....	2
Labyrinthine Disease.....	5
Melancholia.....	3
Migraine.....	5
Myotonia.....	1
Neuralgia, Cervical.....	1
" Coccygeal.....	1
" Dental.....	1
" General.....	1
" Lumbo-Sacral.....	1
" Thoracic.....	3
" Trigeminal.....	9
Neurasthenia.....	54
" Sexual.....	4
Neurosis from Masturbation.....	1

Neurosis Traumatic	1
Paræsthesia of Fingers.....	4
" " Head.....	1
Paralysis Agitans.....	3
Physic Shock.....	1
Sciatica	2
Somnambulism	1
Spasm, Facial.....	1
Spinal Irritation.....	2
Tremor of Hands.....	1
Tic Convulsif.....	2
Vertigo.....	3

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UNCLASSIFIED.

Adherent Prepuce.....	1
Alcoholism.....	3
Anæmia.....	7
Anchylosis, False.....	1
Arthritis, Rheumatoid.....	1
Cardiac Disease.....	1
Caries of Spine.....	2
Catarrhal Fever	2
Crying Baby, from Starvation.....	1
Deaf-Mutism	1
Deafness from Otitis Media.....	7
Debility	1
Diabetes Mellitus	1
Dyspepsia	4
Gouty Diathesis	1
Lithæmia	3
Lumbago	2
Malaria	1
Mastoid Disease.....	1
Otitis Media	1
Phthisis Pulmonalis	2
Pseudo-Angina Pectoris	1
Rheumatism, Articular.....	4
" Muscular.....	4
Senility	2
Sprain of Back.....	1
Stammering.....	3
Strumous Diathesis	1

Syphilis	1
Tinnitus Aurium.....	1
Other Medical and Surgical Diseases with Prominent General Nervous Symptoms	3
Uterine Disease.....	1
Undiagnosed	16
	<hr/>
	82

RECAPITULATION.

Diseases of the Brain.....	33
" " Spinal Cord.....	19
" " Peripheral Nerve	65
Functional Nervous Diseases	224
Unclassified.....	82
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REPORT OF PATHOLOGICAL WORK.

HENRY B. DOUGLASS, M. D.

NOTE A.—*Malignant Disease of the Nose.*

In a paper upon this subject read before the Section on Laryngology of the New York Academy of Medicine, December 28, 1892, the author, after considering the symptoms of intra-nasal malignant disease which would aid in making a differential diagnosis, stated that after a careful consideration of reported cases he had been led to believe that an important distinguishing feature between sarcoma and carcinoma was the point of development and the locality of the tumor. He expressed it as follows: "The locality and point of development of a malignant tumor of the nose is its most important distinguishing feature. From this symptom alone is it possible to make the diagnosis?"

Tumors of malignant character originating intra-nasal particularly well forward and inferior are sarcomatous, while malignant growths involving the ethmoid region and posterior nares are carcinomatous.

Since writing this paper I have seen and examined microscopically in our Hospital work, one case of intra-nasal carcinoma in the service of Dr. L. A. Coffin and one case of intra-nasal sarcoma in the service of Dr. J. E. H. Nichols.

The sarcoma, according to the locality rule, should have developed anteriorly in the lower part of the nares. As a fact it originated in the sphenoidal sinus.

The carcinoma, while it undoubtedly developed from the ethmoid region, was an apparent exception to this rule, from its pushing so far forward and downward along the septum as to appear at the ostium narium.

It is curious that these two cases should each prove an exception to the rule of all reported cases and will lead some to think that the deduction may not stand the test of further experience.

I am inclined to think, however, that the rule will yet prove useful and that it has a value as a factor in differential diagnosis.

NOTE B.—*A Convenient Method for Determining the Relative Number of the Bacilli in Sputum Preparations.*

In the examination of sputum for the tubercle bacillus it has been found important to express the absence or number of bacilli by some term giving a more accurate and scientific expression of their frequency than is conveyed by the generally used but entirely unreliable terms, "few," "scanty" or "abundant." An accurate scientific expression is necessary, especially when it is desirable to determine by repeated examinations of the sputum the increase or decrease of the bacilli over previous examinations. It is also desirable to determine this average and increase or decrease in some simple manner and if possible without the aid of extra apparatus. I have found the following methods applicable to express accurately the average number of bacilli in each specimen and to furnish a reliable standard of increase or diminution.

METHOD:—The revolving object stage of a Leitz microscope, with slide fixed upon it, when tube is fitted with a $\frac{1}{2}$ oil immersion lens and a number 3 ocular, in *one complete revolution* presents forty (40) microscopic fields for examination.

Therefore by simply examining the fields presented in one complete revolution of the movable stage, counting the bacilli as they appear in each field, we can, after counting any desirable number of bacilli, divide by the fields included in the circuit of the stage and at once obtain an average of the number in each field. With my microscope this is expressed as:

$$\frac{\text{No. of bacilli}}{40 \times \text{revolutions.}}$$

If no bacilli are found they may be searched for during more than one revolution of the stage, and the result expressed as: no bacilli found in (expressing fields examined) fields.

Generally the results are expressed as follows:

Leitz $\frac{1}{2}$. o. i. No. 3 oc. 80 fields, no bacilli.

Leitz $\frac{1}{2}$ o. i. No. 3 oc. 80 fields averaging 16 tubercle bacilli, or, Leitz $\frac{1}{2}$ o. i. No. 3 oc. 160 fields averaging 3 tubercle bacilli.

After each complete revolution of the stage with fixed slide, a new area is passed under the lens by moving the slide to the right. Another revolution of the stage is begun and this is continued till the investigator is satisfied.

It is clearly necessary for each microscopist to determine the number of fields presented by his microscope during one complete revolution of the stage, always using the same ocular. Revolving stands of different diameters or varying oculars give a varying number of fields. But when once determined it becomes unvarying for that microscope.

This method requires no special apparatus, no particular skill and furnishes an easily and accurately obtained average for comparison and for history records. Its convenience lies in the necessity of counting only the complete revolutions of the stage instead of the confusing method of enumerating field as it passes under the lens. It also expresses definitely the area examined and is superior to such reports as "No bacilli found on two cover glasses," etc., etc. This method is further applicable to express the average number of other microbes, the gonococcus, the diphtheria bacillus, etc., and can also be applied to microscopic sections of tissue or for other elements of sputum.

Examinations Made in Pathological Laboratory.**THROAT DEPARTMENT.**

Sputum.....	17
Saliva	1
Contents Aural Cyst.....	1
Blood.....	1

CULTURE OF FALSE MEMBRANE.

Pseudo-Diphtheria	5
Diphtheria.....	1

FALSE MEMBRANES.

Nasal Pseudo-Diphtheria.....	1
Tonsil	2
Chr. Membranous Pharyngitis.....	2
Normal Laryngeal Mucous Membrane.....	1
Nasal Granulation Tissue.....	1
Inflammatory Tissue Post Pharynx.....	1
Bifid Uvula.....	1
Chronic Hypertrophic Rhinitis.....	6
" Atrophic Rhinitis.....	1
Adenoids of Post-Pharynx.....	3
Chronic Hypertrophic Amygdalitis.....	3
Tonsil with Muscular Tissue Attached.....	1
Nasal Myxomata	3
Fibro Myxomata (Nasal).....	3
Pedicle of Myxoma (Nasal).....	1
Papilloma of Larynx.....	2
" of Pharynx.....	1
Ranula	1
Cyst of Epiglottis.....	1
Lupus of Nose.....	1
Tuberculosis of Larynx.....	1
Sarcoma of Post Pharynx.....	1
Lymph-Sarcoma of Tonsil.....	1
Epithelioma of Tongue	1
" of Jaw	1
Carcinoma of Nose.....	1
Total.....	68

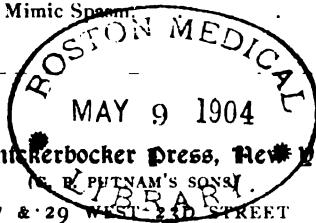
MANHATTAN EYE AND EAR HOSPITAL REPORTS.

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CASES IN OPHTHALMIC PRACTICE.

OREN D. POMEROY, M. D.

A CASE OF HYPERPHORIA WITH ASTHENOPIC SYMPTOMS COMPLETELY RELIEVED BY A SINGLE TENOTOMY OF THE SUP. RECT. OF RT., ALTHOUGH PROPERLY FITTING GLASSES HAD BEEN PREVIOUSLY WORN.

Mrs. L., aged 22, has a young child and is somewhat depressed by nursing it. In addition she has headaches, "nervous chills," and a degree of nervous irritation which almost borders on insanity. She declares that all her troubles are dependent on the condition of her eyes. She has been wearing for a considerable time —.75 D. on left and —.75 D. \odot .25 cyl. axis 90° on right. She is more comfortable while wearing this correction.

There is little or no exophoria, but the hyperphoria is at least 5° and sometimes more, after repeated examinations. She expresses herself as having more trouble in looking downward.

The superior rectus of right was divided sufficiently to produce an over-effect of 2° . In order to effect this four essays were made before accomplishing it. One week afterwards the balance was nearly correct. Nineteen days afterwards there was hyperphoria of 3° . The patient seems marvellously relieved from most, if not all her symptoms, although more than a year has elapsed.

A CASE OF HEADACHES, ETC., RELIEVED BY TENOTOMY OF INF. RECT. OF LEFT, THE HYPERPHORIA BEING RELIEVED AS WELL AS SOME OF THE EXOPHORIA.

Mrs. S., aged 31, has headaches and pain in the back of the neck and a "crazy" feeling in the head, which has continued for several years. For the right $+ .50$ c. axis 90° was ordered and plain glass for the left.

Hyperphoria 4° , esophoria $3^{\circ} +$. Homatropine used in the test for glasses. Advised division of inf. of left. In twenty-seven days the hyperphoria was 4° , exophoria, 1° ; difficulty in looking upwards; divided inf. rect. of left and had 4° of over-effect with diplopia requiring a prism of 2° to fuse the images. In two

days a prism of 4° was required to correct the diplopia (over-effect). Can see single when looking to the right. In four days the over-effect was 2° . Two days after, same condition except very little diplopia. In four days sees double only when looks to left; head feels all right. In four days from this the images are level, and there is exophoria 2° . Symptoms seem to have disappeared.

OPERATION FOR EXOPHORIA AND HYPERPHORIA WITH MODERATE RELIEF
IN A MYOPIC SUBJECT.

Mrs. G., aged 56, has been wearing for some years — 1.75 S. \ominus — .75 c. axis 110° on right and — 1.75 D. \ominus — .75 c. axis 30° on left.

She has, however, headaches, nausea, and inability to use her eyes without pain. At the first examination she had exophoria 5° , hyperphoria 3° .

Five days afterwards the exophoria was 4° and the hyperphoria 2° .

In eight days the exophoria was $6^{\circ} +$, the hyperphoria 3° .

Six days subsequently the right externus was divided and an exophoria of 1° remained.

Seven days afterwards the exophoria was 4° , the hyperphoria 2° ; there was not as much pain.

In thirteen days the hyperphoria was 3° , and the exophoria was 4° . The sup. rect. of right was then divided and an over-effect was produced, causing diplopia, which continued for five days.

In ten days the exophoria was 4° , and there was still 1° of over-effect from the operation (right eye tended to turn downward). This operation gave considerable relief.

In eleven days there was no hyperphoria and only 2° of exophoria. Considerable relief is experienced. It may be noted that the operation for hyperphoria diminished the exophoria.

This subject was not very strong physically, and the operations accomplished somewhat less than might be expected in a younger and more vigorous subject.

A CASE OF ASTHENOPIA WITH EXOPHORIA AND HYPERPHORIA IN WHICH
BOTH EXTERNI AND SUP. RECT. OF RIGHT WERE DIVIDED, WITH ONLY
MODERATE SUCCESS.

Miss D., aged 18, has had asthenopic symptoms for several years. A little more than one year ago I ordered $+ 1$

D. for each, which have done her some service, but still there is trouble. On April 10, 1893 she had exophoria 2° , hyperphoria $4^{\circ} +$. Glasses she was wearing approved. Three days from previous examination the exophoria was 2° , hyperphoria 5° . In four days the hyperphoria was $4^{\circ} +$. Divided sup. rect. of right, and the images were level. Two days after the operation the hyperphoria was 2° , and the exophoria 2° . In seven days the condition was the same, and there was less headache, but the exophoria was 3° . In six days from this the exophoria was 4° and the hyperphoria 3° ; there was manifest trouble with convergence. Six days from this date the externus of the right was divided after three attempts; exophoria 1° , hyperphoria 2° . After two days: "Sees so much better." Twenty days after, the exophoria was 3° . In seven days exophoria 4° , hyperphoria $3^{\circ} +$. In eleven days the exophoria was 5° and the hyperphoria $2^{\circ} +$. Ext. rect. of left was divided, and exact balance was obtained; hyperphoria $1^{\circ} +$. Several examinations were made and by one month the exophoria was 4° , hyperphoria 3° , but the eyes were used with much greater comfort. Note, the return of the exophoria after the operation. In ten days the exophoria and hyperphoria were 2° only. On the whole, the patient thinks the operations have done good. It is worthy of note that the examinations at different times did not give uniform results.

PERIODIC CONVERGENT SQUINT CURED BY WEARING + 2 D. WITH A TOTAL
H. OF 3 D. IN A CHILD NINE YEARS OF AGE.

Olivia F., aged nine, has periodic convergent squint since the age of four years. After attending school for a time the squint became worse and headaches ensued. Atropine was instilled and the ophthalmoscope denoted H. 3 D. Two diopters were ordered to be worn constantly. Three weeks subsequently the child returned, having worn the glasses constantly. Pain in the head and all uncomfortable symptoms have disappeared while the glasses are worn. The eyes are in a natural position, but on leaving off the glasses the squint almost immediately returns. The child was too young to determine whether binocular single vision existed.

A CASE OF CONVERGENT STRABISMUS IN A PATIENT THIRTY-FIVE YEARS OF
AGE, CURED BY + SPHERICO-CYLINDRICAL GLASSES.

Mrs. C. H. D., aged 35, had a convergent squint of about two lines, but which varied at different times; fixed with rt., which

and *genua* turned the left being amblyopic and binocular vision.

After wearing — 3.25 D. C. — for a few weeks the eyes became parallel. This case is reported as a *vertical exophoria*, one of course of sight by correction of the refractive at a subject 35 years of age.

RELATION OF BINOCULAR SINGLE VISION IN A CASE OF DIVERGENT STRABISMUS WITH A HIGH DEGREE OF MYOPIA AFTER TENOTOMY OF THE EXTERNUS.

Charlotte C., aged 32, has had divergent strabismus for twenty years. The vision is $\frac{2}{5}$ in each, with — 23 D. correction. Has *esotropia* a portion of the time, the exophoria being 40° .

Division of rt. externus reduced it to 30° . One week subsequently the left externus was divided. At first, there was still exophoria, but on a second essay the eyes came into position, and binocular single vision resulted. Five days subsequently there was homonymous diplopia, when looking towards the right, and crossed diplopia at seven inches.

Sixteen days afterwards — 18 D. was prescribed, as the stronger lens was found to be uncomfortable.

— 16 D. was ordered for near work. No diplopia at distance, but at five inches the images were crossed.

There was 1° of esophoria. The patient seemed satisfied.

DIVERGENT SQUINT OF $3\frac{1}{2}$ LINES RELIEVED BY TENOTOMY OF THE EXTERNUS OF THE SQUINTING EYE AND THE USE OF A CONVERGING GUY TIED ACROSS THE NOSE.

Maria A., aged 21, has a divergence of the left eye of $3\frac{1}{2}$ lines. Some opacity of cornea, and counts fingers at two feet. The rt. has compound hypermetropic astigmatism. The externus of the left was divided, and the eyes rendered sharply convergent by means of a suture attached to the conjunctiva near the inner margin of each cornea and tied across the nose. In two days this cut its way out, leaving the eyes slightly convergent.

During the past year I have rarely done an advancement for divergence, finding an operation of this kind, or division of both externi with the converging guy, sufficient; but the suture should converge the eyes about as much as is practicable—sometimes three or four lines.

OPHTHALMIA NEONATI, INTERSTITIAL KERATITIS, AND RAPIDLY DEVELOPED
STAPHYLOMY IN A COLORED INFANT.

An infant two weeks old, colored, applied to me with symptoms of ophthalmia neonati, which appeared on the first day of its birth, commencing in the left eye, the other being involved in a day or two. Left cornea showed some opacity at birth. When first seen, the left cornea was absolutely opaque and staphylomatous—sufficient to somewhat separate the lids. The rt. cornea was infiltrated, but the iris could be seen. After two weeks of treatment with the bichloride wash—1 to 6000—with the administration of hyd. c. creta internally, the discharge ceased, and the patient was nearly convalescent, except the opacity remained as at first. Syphilis in one of the parents was suspected, but could not be proven. I then lost sight of the patient.

The interest in the case centres in the proposition that it was one of ophthalmia neonati, with opacity in one cornea at birth, the apparent interstitial character of the keratitis, and the development of so great a staphyloma in the short period of two weeks.

It may not be amiss to note that the cornea seems more likely to be seriously involved in the subjects of African descent than in others.

A CASE OF IRITIS OF TRAUMATIC AND PERHAPS RHEUMATIC ORIGIN, WHERE
IRIDECTOMY RENDERED THE SIGHT NEARLY PERFECT.

Patrick C., aged 30, one year ago was struck on the left eye with a piece of wood, which penetrated the cornea. This was removed. Considerable inflammation followed.

Since this time the patient has had recurring attacks of iritis in both eyes, the rt. being attacked two months after the left; pain severe and of a neuralgic character. Two years ago had an attack of acute rheumatism of three months' duration. On entering the hospital the rt. eye showed conj. of lids and globe, ant. chamber muddy, pupil contracted and adherent to lens, irregular and immovable with exudations T. —. Other eye quite similar, T. —. There was an encysted foreign body imbedded in the cornea. Much pain, photophobia, and lachrymation. Vision, R. $\frac{20}{C}$, L. $\frac{20}{CC}$. Treated by atropine, painting temple with tr. iodine, bathing the eyes with hot water, and using mercurial inunctions.

After ten days the inunctions were stopped, and salicylate of soda administered. In one week from this, patient much better. In ten days the patient was discharged, with vision R. $\frac{20}{LXX}$

+ and L. $\frac{20}{L}$ +. In one week the patient returned, and an iridectomy was done on the left, and the patient was discharged in nine days, with vision $\frac{20}{XX}$.

In twelve days he was re-admitted, with vision only $\frac{2}{CC}$ in the right. Iridectomy was done, and in eight days the patient was discharged, with vision $\frac{20}{XXX}$ - in R. and $\frac{20}{XXX}$ + in L. T. normal in each. This case is peculiar; the starting-point was evidently traumatism of the left, which in two months had extended to the rt., but apparently not sympathetic. There was no history of syphilis; the rheumatic diathesis very likely influenced the disease.

Proof that the second eye was not sympathetically affected hardly exists, although the recovery was too perfect to admit that theory. The minus tension permanently disappearing is unusual, but a few cases of this kind have come under my notice.

At least the result of treatment was most fortunate.

SYMPATHETIC OPHTHALMIA.

FRANK W. RING, A.M., M.D.

CASE I.—Matthew Cavanagh, aged 19, came to the Hospital June 1, 1894. Seven hours previous the patient was struck in the left eye with a small piece of steel which flew from a bar on which he was working. The ocular and palpebral conjunctiva was reddened and inflamed. A small wound in the lower inner quadrant of the cornea close to the sclero-corneal junction. The iris seemed adherent to the wound, with a slight cloudiness and a beginning opacity of the lens. Has a little pain, O.D. $\frac{1}{8}$, O.S. $\frac{1}{16}$, atropine and hot water were applied.

June 3d.—Hypopyon developed with haziness of the cornea.

June 8th.—No improvement having occurred, and as the anterior chamber was filled with pus I decided to extract the lens; and, failing to find the foreign body, to enucleate the eyeball. An incision was made in the lower portion of the cornea and the iris excised; a Gruening magnet was introduced with the satisfactory result of withdrawing a small piece of steel; after cleansing the anterior chamber the eye was bandaged.

June 10th.—Dressing removed and eye found in a satisfactory condition, no particular reaction.

June 21st.—Anterior chamber clearer, some exudation, general appearance encouraging.

July 13th.—Patient quite free from pain, inflammation subsiding, no evidence of sympathetic disturbance in fellow eye. Patient, after being warned to return to the Hospital upon the slightest evidence of any irritation, was discharged.

July 23d.—Patient returned to the Hospital with marked evidence of sympathetic inflammation in right eye; photophobia, lacrymation, plastic iritis with adhesions, pupil filled with exudation, iris discolored. The left eye was immediately enucleated.

July 25th.—Right eye improved, very little reaction, pupil widely dilated.

August 2d.—Eye worse, much inflamed; applied leeches to the temple, inunctions of 20% solution of oleate of mercury, quinine and tonics.

August 9th.—Iodide of potash and atropia; redness subsiding, general improvement.

August 17th.—Discharged. O.D. $\frac{1}{8}$.

November 16, 1894.—Pupil filled with exudation, vision = $\frac{1}{8}$, $\frac{1}{16}$ with — 3.50.

CASE II.—S. Richards, aged 46, came to the hospital Sept. 21, 1891, with the following history: Nineteen years ago while working on a piece of steel with hammer and chisel, a piece of the metal flew off and struck the left eye. Patient says the sight was immediately lost so that he could only count fingers. The eye became red and very painful but upon the application of leeches the pain subsided. He came to Dr. Agnew two weeks later, but as the eye was looking so well it was decided to wait further developments. Patient came to the out-door clinic for two months and then ceased his visits as the eye was apparently safe. Last week his attention was called to the redness in the left eye by a friend, who remarked that there was something in the eye *jumping*. On examination, a dislocation of the lens was noticed, and also what appeared to be a fine shred extending from the centre of the cornea through the anterior chamber; the iris was dull in color and not responsive to light, nor was it susceptible to the action of atropia or eserine, the lens was supposed to be transparent, as no opacity was observable through the pupil, but his vision was improved with a strong convex lens. As the right eye showed signs of a beginning uveitis he was advised to have the left enucleated, which was done. Vision being in O.D. $\frac{3}{8}$, O.S. = fingers at one foot, improved with + 10.

Upon examination of the globe the lens was found hanging by a few shreds of the zonular ciliaris, drawing upon the ciliary processes. The lens was opaque, but had a hole through its centre, so that it resembled the shape of the ordinary rubber ring cushion, which accounted for the patient seeing better with a + 10 lens. A piece of steel $\frac{1}{8}$ of an inch long was found encapsulated in the upper inner portion of the retina and choroid, and was not the ultimate cause of the sympathetic inflammation. The patient made a speedy recovery, and was discharged September 28th, with a vision of $\frac{3}{8}$.

CASE III.—Thomas Jennings, aged 17.

Diagnosis.—Perforating wound of cornea in left eye, injury caused by a flying nail.

Operation.—Extraction of soft cataract and iridectomy.

History.—The patient was driving a nail into the ceiling; a slanting stroke of the hammer caused the nail to glance, striking the left eye. It immediately became very painful, with entire loss of vision. On examination there is found a perforating wound of the cornea just below the centre, the anterior chamber empty, lens opaque, and iris caught in the wound.

Treatment.—Sol. of atropia and cocaine t.i.d., iced cloths at intervals if patient suffers pain.

August 8th.—The pupil is dilated, general appearance of eye better. Operation by Dr. Van Fleet under cocaine. Iridectomy below, with extraction of lens, most of lens matter removed, eye bandaged.

August 12th.—Iris well dilated, wound gaping, with incarceration of soft lens matter.

August 20th.—Wound less ragged, opaque lens matter absorbed, cornea less bulging, less chemosis of conjunctiva.

August 30th.—Continued improvement,—patient discharged.

October 16th.—Patient readmitted, the anterior chamber was entered with a keratome, some soft lens matter and exudation was expressed, the eye was cleansed and bandaged, and patient put to bed.

November 3d.—Some exudation on lens capsule, circumcorneal injection, anterior synechia, pupil fixed.

November 17th.—Eye more congested, Tn. + 1, very painful and sensitive. No improvement occurring, the eye was enucleated on November 20th, O.D. = $\frac{3}{8}$.

November 26th.—Discharged.

December 20, 1890.—O.D. = $\frac{3}{8}$; patient has noticed for a week that he could not see so well; five days ago began having pain in the eye, it became red and inflamed but he failed to report; the iris is cloudy, there seems to be a complete posterior synechia, tension minus.

Treatment.—Atropine every two hours, inunctions of oleate of mercury 20 % solution, and hot water.

February 16, 1891.—Since the last date the patient has received all the best known remedies for the general uveitis. He has gotten better and worse until to-day his vision is $\frac{1}{100}$, normal tension, with a vitreous full of floating bodies; he was discharged.

February 21, 1891.—Patient re-admitted for the third time; the eye very irritable, with a vision of only $\frac{1}{100}$, vitreous full of floating bodies, tension normal; put him on atropine and hot water.

February 27th.—The injection of pilocarpine produced very copious sweating, patient growing weaker each day and vision failing all the time.

March 1st.—Mercury and pilocarpine continued, also atropine and hot water.

March 12th.—Anterior chamber very shallow, tenderness of globe, engorgement of deep vessels, vision $\frac{1}{100}$.

April 2d.—The patient's general condition seems improved, says he can see better, less ciliary engorgement, less lachrymation and photophobia.

April 6th.—Vision = $\frac{1}{100}$.

Treatment.—Cleansing with solution of boric acid, quinine t.i.d. Urine: color deep amber, specific gravity 1030, acid reaction, no sugar, no albumen.

April 25th.—Vision $\frac{1}{100}$; discharged.

April 28th.—Came to clinic to-day, sees better, O.D. = $\frac{1}{100}$, $\frac{3}{8}$ with — 6.0 C — 1.50 ax. 180°.

CASE IV.—Miss Florence, aged 11, October 7, 1890, was shot in the right eye with an air-gun, brought immediately to the Albany Hospital where she remained six weeks, at the end of which time the eye was enucleated. On the day previous to the enucleation the left eye became affected, was sensitive, injected, and painful; after one week she was discharged and went home, where she was kept in a dark room for six weeks. She now comes to the Manhattan with a chronic conjunctivitis, circumcorneal injection, shallow, anterior chamber, pupil dilated and unresponsive to light, tension normal.

September 17th. She has continued to improve under proper treatment until now she has a vision of $\frac{3}{8}$ with — 1.50 C — 55 ax. 180°.

There are various theories advanced in regard to the causes of sympathetic ophthalmia, and the preceding cases are cited to combat the idea that any one theory covers all. It is not within the province of this article to designate all the pathological conditions which occasion this affection. I might state that wounds of the ciliary region are well known to be especially dangerous, also foreign bodies in the globe. There are two types of sympathy: the irritative—of which the symptoms are photophobia and lachrymation, apparent presbyopia, etc.; the inflammatory type with serous iritis and uveitis, cyclitis and neuro-retinitis; then we have the plastic form with pupillary adhesions, hypopyon, shallow anterior chamber, etc.; but that which I wish particularly to call attention to is the mode of transmission.

Fifty years ago Mackenzie attributed sympathetic ophthalmia to three causes. 1st. The disease can pass from the blood-vessels of one eye to the other at the point of communication within the brain. 2d. Through the ciliary nerves. 3d. From the retina through the optic nerve to the chiasm, thence to the retina of fellow eye. Second period; the ciliary nerve theory, Heinrich Muller, 1881. Third period; that of microbic origin,

(Snellen, Berlin, and others). Fourth period ; modified ciliary nerve theory, due to disturbance of nutrition and circulation produced by irritation of ciliary nerves in injured eye, where the longer the changes exist and more extensive, the more fertile the soil for action, whether chemical or microbic. (Schmidt-Rimpler.)

In regard to the migratory theory of Deutschmann ; he found staphylococcus in eyes which had produced sympathetic ophthalmia in the fellow eyes, and cultures created the same symptoms in rabbits' eyes. Limburg and Levy experimented in forty-two animals with negative results—*i. e.*, they could not produce sympathetic ophthalmia with the material from injured eyes which had caused sympathetic trouble. Gifford in his experiments could not corroborate those of Deutschmann. Sympathetic ophthalmia in man is never attended with a general infection, therefore experimentally the disease must be produced in the fellow eye without causing general infection, which was not the case in Deutschmann's experiments. Greff in fourteen neurectomies of injured eyes found no organisms in either the optic nerve or sheath. Pflüger had the same results, whereas Deutschmann in all his experiments had positive results, but not without general infection. Allowing the theory of migratory micro-organism a probable one due to a specific germ, then the disease cannot occur without it, and it should be found in this disease and in no other ; it ought also to be cultivated experimentally and produce the same affection. One positive result in bacteriological work proves little ; it should be repeatedly found, to be of any value. The bacillary theory should apply to panophthalmitis, which we know does not tend to sympathetic inflammation, so we find exceptions to all theories. We get sympathetic inflammation after enucleation which would tend to disprove the ciliary nerve theory ; the fact that an eye is removed before there is any evidence of disease in the other, does not guarantee immunity from infection later on.

Let us compare the different theories to the cases in question.

Case I.—There is a posterior vitreous lymph stream and

also an anterior stream flowing forward around the lens ; the aqueous leaves the anterior chamber at its peripheric angle. A current flows from the brain to the eyeball in the sub-vaginal space. (Gifford.) A very plausible explanation of the migratory theory in this case—had I been able when I extracted the piece of steel to have had an examination of the contents of the anterior chamber, I might have found the specific germ and immediately enucleated the eye, thereby saving the other. Here the infection may have travelled through the nerve sheaths along the vessels affecting the vitreous and causing uveitis.

Case II.—Judging from the fact that this patient had carried a piece of steel in his eye for nineteen years and not been inconvenienced thereby except from the loss of vision, either the steel entered as an aseptic foreign body, or the original inflammation was so violent that the posterior lymph channels were closed so quickly that the sympathetic process was stopped at the outset. No irritation occurred in the case until undue traction was made on the zonula, exciting the ciliary nerves, the irritation of which caused a reflex disturbance affecting the blood circulation and nutrition of the other eye ; *Modified ciliary nerve theory.*

Case III.—This may have been a uveal inflammation of microbic origin, and exhibits the tendency which many cases manifest toward repeated relapses ; may be due to a not infrequent gathering of these micro-organisms into colonies, where they alone produce mischief, as individually they are quite inert, which may explain the freedom from sympathetic inflammation in many eyes after serious injury. After repeated relapses in this eye the inflammation exhausted itself, leaving a very fair vision, due to constant care and treatment.

Case IV.—This case is cited to show the change in refraction after a sympathetic inflammation. I have often noticed that eyes subjected to sympathetic ophthalmia become *myopic* ; such is the fact to a marked degree in three of these four cases. Is this due to a change in the antero-posterior axis of the eye ? I think not, nor is it due to any change of curvature of the cornea ; even with a myopic astigmatism the ophthalmometer

shows no curvature, therefore we look to the lens and ciliary muscle, the fibres of which draw upon the zonula and release the crystalline from its normal tension and by its elasticity produces an anterior curvature, due to a pathological condition of the ciliary nerves, an element in favor of the ciliary nerve theory. I have observed in sympathetic inflammation caused by atrophied eyes, with ossification of the choroid, that the affection does not occur until the bony plate extends into the ciliary region, and I am inclined to think that if sympathetic ophthalmia always comes from one and the same origin, that origin is due to the reflex irritation of the ciliary nerves. Facts do not substantiate the migratory micro-organism theory.

THE COURSE AND FATE OF ENUCLEATION AT THE MANHATTAN.

JUSTIN L. BARNES.

DURING the period of time extending from October, 1893, to October, 1894, the Manhattan Eye and Ear Hospital has admitted to its wards and cared for more than sixty persons suffering from maladies which terminated in enucleation.

Enucleation of the eye is demanded in a considerable number of conditions, nearly all of which have met with their representatives in the present series. To wit: Enucleation was performed in connection with Wounds of the globe (23 cases), with Phthisis bulbi (19), a close second; while Panophthalmitis (6), Tumors of the orbit (4), Foreign body (4), Staphyloma (3), Irido-cyclitis (2), and Glaucoma (1) complete the list.

No table of these cases will be presented, but, rather, a comparison and analysis of those instances exhibiting more prominent and conspicuous features. For convenience these cases will be discussed under two divisions: the traumatic and the pathological.

Traumatic division.—This class includes the Wounds of the Cornea and the Foreign bodies. Of these, the majority sustained, with or without retention of some foreign matter, injuries of the ciliary region. This is a natural result, for enucleations after wounds are most often necessary from the well known ciliary reaction upon injury of this very highly sensitive tract. Two of these patients were instances of rupture of the globe, and nearly every case was followed by initial or threatened sympathetic inflammation, for the avoidance of which enucleation was done.

In one case the patient's traumatism was induced by a sudden movement of the head at the moment an iridectomy was under way. The iris was torn from its attachment through

fully one half of the circuit. Without completion of the operation, the eye was bandaged, violent reaction set in, and on account of ominous symptoms in the fellow eye, enucleation was promptly performed. This illustrates the importance of using cocaine as an anæsthetic in only such cases as evince perfect self-control ; or the value of complete subjection under ether.

Another patient thrust a penknife through the ciliary region—a singular accident—and in a few days there was an extensive deposit of lymph in the pupillary and adjacent area. Iridocyclitis followed and symptoms of sympathetic irritation in the other eye called for enucleation.

In order to hasten the ripening of a cataractous lens, trituration through the paracentesized cornea was the occasion of subsequent enucleation in one instance ; which cannot be said to be encouraging to this particular method of hastening nature's work—although one unfortunate case can point out only a possible source of danger, which must be taken into account.

While I am emphasizing the danger of *operative* traumatism, I find that three cases of extraction of cataract were followed by phthisis bulbi, and were the subjects of subsequent removal of the offended and offending eyes. In one of these patients a cataract was present, due to some previous traumatism. After the active stage had been safely survived, the cataract was removed by linear extraction. In about a month panophthalmitis involved the eye in enucleation. In another instance, after a bident operation for the removal of a dislocated lens, irido-cyclitis required the enucleation, because of threatening irritation in the opposite eye. These cases also show that the traumatism for which a patient may be obliged to lose an eye can be inflicted by the surgeon as well as by the victim.

Struck through the ciliary region, one patient was notably the subject of greatly increased tension and a search was made for a supposed foreign body, though none was discovered. However, on account of irritation in the fellow eye, enucleation was advised. During the course of the operation, a sudden

and severe hemorrhage took place, the eye protruded extensively and the lids became extremely tense. Canthotomy was done, and the eye was removed. But hemorrhage continued and orbital fat in considerable quantity presented. The fat was not removed and the orbit was not packed; but firm pressure under a bandaged pad was provided and the patient finally did well. Later a canthoplasty was done to replace the lids.

But perhaps the most interesting of the traumatic cases are a series of six foreign body patients. It was during this period, which covers the time in which these sixty or more cases were seen, that many interesting and more or less successful attempts were made to extract from the interior of the globe foreign bodies, supposed to be of steel or iron, by means of the magnet. It is notable that in all of these six cases the magnet was introduced, with success in one case, and that *all these eyes were subsequently enucleated*. In one case in which no foreign body was withdrawn by the magnet, the lens came from the eye; enucleation was done at the same sitting, and upon dissection the foreign body was found inextricably lodged in the fundus. In another, the reaction against the offending foreign body was so extensive, that hypopyon was present. In this eye the opening into the globe was made so as to evacuate the pus; then the magnet was introduced and was followed by the withdrawal of the foreign body. The eye healed and the patient was discharged. But in about six weeks the patient returned with the eye in a high state of inflammation, and accompanied by sympathetic ophthalmia in the fellow eye. The offending organ was enucleated, and when the case was discharged the vision in the remaining eye was only $\frac{8}{80}$.

Pathological division.—This class includes a large number, as stated, of instances of phthisis bulbi. The cause in many of these cases of the shrinking of the eyeball is unknown, many of them due, no doubt, to traumatism originally. In one remarkable case, the patient stated that the eye had gradually been growing smaller for some dozen years or more, dating from an iridectomy. The eye was enucleated, but the orbit was soon the seat of a rapidly growing tumor. It was removed,

but in three or four days a new growth reappeared quite as large as the former. The Hospital pathologist examined a specimen of the growth and reported the presence of carcinoma. Subsequently the patient disappeared from observation. In two cases of phthisis bulbi the eyes were removed in order that their presence might not endanger cataract extractions contemplated.

Several tumors of the orbit necessitated enucleation. In one an eye was involved in a glio-sarcoma, and after enucleation the orbit was most thoroughly and effectually eviscerated *with a teaspoon*, which method appears to be safe and clever—for in attempting to completely extirpate the tumor one can do injury to the deeper parts with scissors or other *sharp* tool and thus imperil the life of a patient through meningitis. Unhappily in this case, however, after several months the sufferer was seized with brain symptoms and died.

Of glaucoma cases requiring enucleation I must make mention of two instances. In one an iridectomy had been done some two years previously. But the patient reappeared, having sustained rupture of the globe, with hemorrhage, and enucleation was promptly advised and performed. Both eyes, in the second case, were the seat of glaucoma. Immediately upon the enucleation of one eye, a frightful hemorrhage ensued, and ecchymosis of *both* eyes promptly resulted. The orbit was packed and the patient did well, there being no noteworthy points to be mentioned in the subsequent history.

Methods.—As a rule enucleation has been done without conjunctival sutures, as is customary far and wide at the present time. The conjunctival foramen was, however, closed in some two or three cases.

It is my opinion that usually no stitches need be used—but whenever a very ragged conjunctival margin be left, suturing will materially aid in securing a satisfactory socket.

It is to be noted that the several surgeons began the operation in various ways. Some first made the circumcorneal section of the conjunctiva and then divided the muscles, while others divided the conjunctiva for a short distance, cut a muscle from its insertion, and then continued in like manner the

tour around the cornea. I believe that most operators divide the superior rectus first, which is done in order to prevent the eye from rotating upward out of convenient reach. As for the orbit, in only two cases was this cavity packed. In these cases packing was done either for the support of orbital adipose tissue or for the purpose of tamponing in order to reduce and check hemorrhage.

After-Treatment.—This was comprised in irrigation with either boric acid in saturated aqueous solution or with the bi-chloride of mercury collyrium in varying strengths, as appeared to be indicated, and vaseline and the Agnew spray were frequently employed,—and all this in connection with moderately firm support by means of bandaging. Usually in a few days the patient was in good condition and was therefore discharged. But in about a half-dozen instances cellulitis occurred. This was reduced by the aid of iced-cloths and anti-septic irrigations.

In no case did enucleation result fatally to the patient, unless possibly, in some remote and indirect manner in two cases. The mortality from enucleation is set at a very low figure. Noyes states that it probably may be called one in four thousand and that the chief determinating factor of mortality in this connection lies in panophthalmitis.

The *occasions* for enucleations are many, and, as above stated, have supplied examples of nearly all of them in this series. The *purposes* of this operation are fewer and command our earnest consideration ; and so the ophthalmologist must face these queries : Is the other eye imperilled ? Is it in immediate danger ? Can this eye not be saved ? or must it be sacrificed, either to save the fellow eye or to reduce pain in a degenerated eye ? These are the vital questions which confront every ophthalmic surgeon. Let him who will, assert that he can meet them without hesitation or anxiety and then—regard him in the light of your possible future adviser ! And, of course, if an eye is hopelessly destroyed, and a patient desires cosmetic amelioration, there may be no such solicitude ; but I do not refer to this class of patients, but rather to those instances of recent disease or wound in which our decis-

ion cannot be long deferred, and in which our conclusions are going to be confirmed in the final result or our peace of mind enveloped in vain and unceasing regret and reproach.

It is a justifiable aphorism that in general an eye should be kept in its natural site just as long as possible; but we must not hesitate to remove the offending organ upon clear and supportable grounds for so doing. In children it is claimed that it is especially important to postpone enucleation (so long as the unfortunate organ is no source of menace) on the assumption that, otherwise, when the child grows up, he will be unable to wear an artificial eye. This is attributed to two facts: that the socket shrinks and thus often renders the wearing of the artifice an impossibility; and that in the child the absence of the natural support of the eye tends toward a failure of symmetrical facial development, and consequently still further limits the probability of ability to wear the artificial eye in mature years.

But however this may be, when the determination is made, when the time is set for enucleation, we have, before a single instrument is taken into our hands, certain duties and responsibilities toward our patient, which must be despatched in advance. It is our duty to set forth the dangers of operating, the perils of non-interference; we owe to him a clear statement of the several pros and cons which have led us to our decision. The results, both probable and possible, we must state, and *then we must not urge him* to submit, but let upon him rest the responsibility. We shall have then enough to do in taking care of our surgery.

I shall not further dwell upon these points nor upon methods and after-treatment, but I shall conclude with a few observations on the *future* of our patients.

He will presently ask if it is now time for him to secure his more or less happily contemplated artificial eye. If the socket is clean, free of discharge, and contains no granulations or rough or uneven patches, an eye can be inserted with reasonable assurance of its tolerance. It is necessary to instruct him about wearing it only a little at the outset, to never wear it at night, to be careful that it is not subjected to any rough usage.

Furthermore he must be forewarned that this eye will not be so readily capable of that freedom and harmony of motion found in the natural eye.

And then will follow the learning of new lessons, not by a patient who has long since lost sight in the eye to be enucleated, but by one who is the victim of recent injury or disease necessitating this operation. For his binocular vision is now monocular, and this entails the loss of perspective perception, with all that it implies. Also his field of vision is now cut off on one side of the binocular field and he will have to learn to avoid mishap from now unseen sources. And thus this unfortunate enters upon a plane of more or less contracted usefulness—thankful perhaps that nature gave him two eyes originally, one of which has been sacrificed; a philosophical reflection offset to a degree, in him who has lost an eye, by the constant dread of meeting a similar fate in the other.

REPORT OF ONE HUNDRED AND EIGHTEEN CATARACT EXTRACTIONS; WITH REMARKS.

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I PRESENT herewith tabulated statistics of one hundred and eighteen cataract extractions, of which one hundred and thirteen were simple and the remaining five combined with iridectomy. These cases are consecutive, and include all uncomplicated senile cataracts operated upon by me in hospitals and in private practice since the publication of my last series of cataract extractions in the *Transactions of the American Ophthalmological Society*, vol. vi., part 1.

I greatly prefer the simple extraction in all ordinary cases of senile cataract. In my experience it is a less difficult operation to perform than the combined. The traumatism involved in the bruising of the iris during the extrusion of the lens seems to be less than that necessarily inflicted in excision of a portion of the iris. Moreover, the bleeding from the severed blood-vessels of the iris very frequently floods the pupil, obscures the lens, and renders the remaining steps of the operation more difficult. We are unable to *see* the anterior capsule while incising or lacerating it with the cystitome, and after we have removed the lens, we are left in doubt as to whether we have left any considerable amount of cortical matter behind. We are also absolutely sure that the eye thus operated upon cannot recover with that ideal result—a central, circular, movable pupil.

Nevertheless, there are certain conditions that seem to demand the combined operation as the one less likely to result in failure.

I prefer and follow the combined method :

1. In cases in which there is an evident predisposition to glaucoma, as when the fellow eye has already become blind with that disease.

2. In cases in which the patient possesses little or no self-control, so that not only is the operator greatly embarrassed during the operation by the failure of the patient to follow his directions, but subsequent prolapse of the iris is rendered probable by the unrestrained movements and manipulations of the patient.

3. In cases in which prolapse of the iris has occurred during convalescence from a simple extraction on the fellow eye, thus showing that the conditions favoring the occurrence of a prolapse are present in the eye to be operated upon.

4. In cases in which, after the simple extraction has been completed, it is found to be impossible to so replace the iris that the pupil is central and circular.

5. In those cases in which the pupil does not dilate to cocaine. Extrusion of the lens through a small pupil with an unyielding sphincter involves too much pressure for the good of the eye.

Immediately before being used for any operation upon the eye, the instruments are rendered aseptic by immersion in boiling water. The eyelids are carefully washed, inside and out, with a solution of bichloride of mercury, 1 to 5000. I generally wash all the contiguous parts with the same solution. I avoid using the bichloride solution after the anterior chamber has been opened, but cleanse the eye during the succeeding steps of the operation with a saturated solution of boric acid. We use both solutions *warm* at the Manhattan.

All my simple extractions were done under cocaine. I use a 4 % or a 6 % solution. Some of this is dropped into the eye at intervals of three or four minutes for three or four times. I prefer to wait until the pupil is about half dilated before commencing the operation. This generally occupies about twenty minutes after the first instillation of cocaine. I think it requires less pressure to extrude the lens than it does through an undilated pupil. On the other hand, if we wait until there is *wide* dilatation of the pupil, there is more danger of the iris falling before the knife and being cut in completing the section, thus defeating our object of making it a simple extraction. I always make the incision upward. I try to place

the entire cut in the limbus, and to make it include a little less than half the circumference of the cornea. I always stand behind the patient, holding the knife in my right hand in operating upon the right eye, and in my left hand in operating upon the left eye. The eye being held open by a spring speculum, I seize a broad fold of conjunctiva close to the lower border of the cornea, in the vertical meridian, with the fixation forceps, so as to have the eyeball under control. Having made the "puncture," which is always easy to place just where we want it, I carry the knife slowly across the anterior chamber, and as soon as its point becomes obscured behind the semi-opaque limbus, I depress the handle a little and proceed to make the "counter-puncture." By this manœuvre the accident of making the counter-puncture too far back in the sclera may generally be avoided. As soon as the point of the knife emerges on the other side, I make a deliberately rapid thrust so as to carry the edge of the knife above the border of the pupil before the aqueous humor escapes, and thus I avoid cutting the iris. I watch the point of my knife and make sure that it does not prick the skin at the inner canthus. Should such an accident be awkwardly permitted to occur, the patient is apt to *start*, and the success of the operation is imperilled. Having safely landed the edge of the knife beyond the pupillary border, the remainder of the cut may be made less rapidly. Not more than two or three backward and forward movements of the knife should be necessary to finish the section, if the instrument be sharp. The use of a dull knife in making the section cannot be too much deprecated. It involves a discouraging amount of sawing and inflicts an unnecessary amount of traumatism. In completing the section, I like to make the slightest possible conjunctival flap. If the edge of the knife has to be turned forward to avoid cutting the iris, the section will be completed in clear cornea, and healing will probably be retarded by a grooving or furrowing of the wound. The next step is to open the anterior capsule of the lens. In many of my cases I endeavored to incise the capsule behind the upper portion of the iris, as done by Dr. Knapp of this city. When successful in this, I thought there was less tendency to adhe-

sion of the bruised pupillary border of the iris to the capsule during recovery, without evidences of iritis. But in my hands there were two objections to the method. Sometimes after incising the capsule in this way and then attempting to remove the lens, I found that I had not opened the capsule sufficiently and had to repeat the manœuvre, and once or twice I lost vitreous apparently from having opened the capsule too near the suspensory ligament of the lens. I now open the capsule by several irregular incisions in the pupillary area, probably tearing rather than cutting it. I believe that a pretty thorough laceration of the capsule favors the easy exit of the cataract. Having opened the capsule, I immediately remove the fixation forceps and proceed to extrude the lens through the wound by means of pressure and counter-pressure with spoons. For pressure upon the cornea I use the hard rubber or tortoise-shell spoon ; for counter-pressure on the scleral lip of the wound, I use the metallic spoon. With the latter very little pressure is made, sometimes none at all. Sometimes I have had to aid the delivery of a sticky lens from an inelastic eye by coaxing it out with a cystitome. The pressure upon the cornea with the tortoise-shell spoon should always be made intelligently. The pressure should be made upon the lens near its lower border, and should be so directed as to tilt the upper border forward and engage it in the wound. During its exit the lens should be followed by a steady, unintermitting pressure. The pressure should be lessened a little just before the cataract makes its final exit ; otherwise vitreous humor may follow. I tried pressing out the lens by means of the eyelids. I finally abandoned it as an unsafe procedure. It is often quite impossible to make pressure with the lower lid at exactly the point where you want to, simply because you cannot get the patient to look in the right direction. If he looks up a little too far, you make your pressure on the sclera, or too near the lower border of the cornea, and run the risk of losing vitreous.

As soon as the lens is out of the eye I remove the speculum. If any cortical matter remains, I endeavor to work it out with the eyelids. What I cannot get out in that way I leave behind. I am under the impression that the cases in which I have

washed out the anterior chamber with a warm solution of boric acid have not done as well as they would had I let them alone.

I have been greatly aided in determining the presence or absence of cortical matter by the electric light concentrated upon the pupil by a strong convex lens. I have in at least one case removed a thickened and degenerated anterior capsule with iris forceps immediately after the extraction of the lens. The result was excellent. The pupillary space being clear, the next thing is to see that no iris, or other material, is left in the wound. In most cases the iris resumes its normal position spontaneously. When it does not, a little manipulation of the upper lid, or a little stroking of the wound with a cataract spoon will generally be sufficient. In some cases the iris repositor has to be introduced through the wound to push the iris back into its place. When it is found to be impossible to replace the iris so that the pupil is central and circular, it is better to perform an iridectomy at once, and so avoid a probable prolapse of the iris. Any shreds of coagulated blood may be removed from between the lips of the wound by means of the iris forceps. I generally run a small probe or spatula along the whole length of the wound in order to make sure that nothing is left in it. The lips of the wound should be left in complete coaptation.

Before dressing the eye, I usually instil a drop of solution of sulphate of eserine, gr. $\frac{1}{4}$ to $\frac{3}{4}$ i. I am inclined to think it makes very little difference, however, whether eserine or atropine, or a 10 % solution of cocaine, or nothing at all, is dropped into the eye after the operation and before applying the dressing.

I first smear the edges of the closed lids with bichloride-vaseline, 1 to 5000. Next I apply a bit of gauze to keep the fibres of cotton from getting between the eyelids, then a properly shaped mass of absorbent cotton, a thin flannel bandage, and over all, Ring's ocular mask. The patient is put to bed, and generally prefers to remain there till the morning of the second day, when the bandage is removed and the eye inspected for the first time. During the first few days the patient should

be fed on soft and easily digested food. His bowels should be kept open, a gentle laxative being administered if necessary. He should be cautioned not to lie on the side of the eye operated upon. He may sit up as much as he wants to from the first; but always should move carefully with the aid of an assistant. He should always be kept in a moderately light room.

If the recovery is smooth, no treatment is necessary but to protect the eye from injury and from a bright light, and to keep it clean. If there is considerable redness, showing a tendency to iritis, atropine, 1 % solution, should be dropped into the eye sufficiently often to keep the pupil dilated. If incarceration of the iris occurs, no interference is necessary. If prolapse of the iris takes place, the prolapsed portion should be excised at the earliest opportunity. If, in spite of antiseptic precautions, suppuration appears in the line of the wound, the latter should be thoroughly seared with the actual cautery throughout its entire length without delay. Of course, iced cloths, hot fomentations, atropine, leeches, and other antiphlogistic measures will have to be resorted to in those exceptional cases that "are bound to go to the bad" in spite of everything. Sometimes we are humiliated by being compelled to *enucleate* the eye in order to save the patient from a long period of suffering, and to render more safe the removal of the cataract from his other eye.

Although in the tabulated statistics I have separated the five "combined" extractions into a separate group, yet as the number is so small, I have thought it best to include the whole number operated upon (118) in the following statement of sex, age, results, etc.

There were 53 males and 65 females.

The youngest patient was 27 and the oldest 105. The latter may be taken with a grain of salt. There was circumstantial evidence, however, that she was not far from a hundred years old.

57 right eyes and 61 left eyes were operated upon. Loss of VITREOUS was the only accident noted as occurring during the operations. This happened four times, or in less than $3\frac{1}{2}$ %.

During recovery, *incarceration* of the iris in the wound occurred 5 times, or in a little over 4 % ; *prolapse* of iris occurred 11 times, or in less than 9½ % ; *iritis* occurred in 8 cases, or in nearly 7 % ; *striped keratitis* was observed in 1 case in which the anterior chamber had been washed out ; iritis resulted in *occlusion* of the pupil in 1 case ; in 1 case there was a *leaking anterior chamber that never was re-established*, the sight being lost without much else to account for it, and in 4 cases there was *suppuration* followed by *irido-choroiditis*.

As to *secondary operations*, *paracentesis* was done in 1 case to relieve an evidently increased tension, excision of prolapsed iris in 7 cases, cauterization of prolapsed iris in 3 cases ; dissection was done in 28 cases, or in less than 24 % of the eyes operated upon ; iridectomy was done in 1 case, iridotomy in 1 case, and Agnew's hook operation in 1 case.

In making up the final results, I have followed the method so long in vogue of calling vision $\frac{20}{200}$ and upwards a "success," vision of "counting fingers" up to $\frac{20}{200}$ a "partial success," and all vision below "counting fingers," including no vision at all, "a failure."

FINAL RESULTS.

2	eyes	had	vision	$\frac{20}{200}$.
3	"	"	"	$\frac{20}{150}$.
9	"	"	"	$\frac{20}{100}$.
24	"	"	"	$\frac{20}{80}$.
19	"	"	"	$\frac{20}{70}$.
17	"	"	"	$\frac{20}{60}$.
12	"	"	"	$\frac{20}{50}$.
2	"	"	"	$\frac{20}{40}$.
16	"	"	"	$\frac{20}{30}$.
1	"	"	"	$\frac{20}{20}$.
1	"	"	"	$\frac{20}{15}$.
2	"	"	"	$\frac{20}{10}$.
2	"	"	"	$\frac{20}{5}$.
1	"	"	"	$\frac{20}{4}$.
1	"	"	"	$\frac{20}{3}$.
6	"	"	"	counting fingers at 1'.
				0 and perception of light.

104 successes, or 88 %.

8 partial successes, or 6 %.

6 failures, or 5 %.

SIMPLE EXTRACTIONS.

No.	Sex.	Age.	Operation. Incidents. Course of Healing. Remarks.	No. of days continued.	Vision before Secondary Operation.	Secondary Operation.	Ultimate Vision.
1	F.	50	O. D. Smooth; cortical; eserine before bandaging; eye lost by hemorrhagic iridochoroiditis.	43			Perception of light.
2	F.	64	O. S. Smooth; eserine; uneventful.	15			88 with + 10. D. \odot + 3. D. ax. 10°.
3	M.	55	O. S. Smooth; eserine; pupillary membrane.	14			88 with + 11. D. \odot + 2. D. 180°.
4	M.	58	O. S. Smooth; eserine.	14			88 with + 10.5 D. \odot + 5. D. 15°.
5	F.	69	O. D. Smooth; cortical; eserine; incarceration of iris followed by prolapse and iridochoroiditis.	22	88 with 12. + D. \odot + 1.50 D. 180°.	Diagnosis.	Perception of light.
6	M.	72	O. D. Smooth; eserine.	22		Cauterization.	88 with + 9. D. \odot + 5. D. 15°.
7	F.	50	O. S. Smooth; eserine.	14			88 with + 11. D. \odot + 2. D. 180°.
8	F.	45	O. D. Smooth; eserine; conjunctivitis.	8			88 with + 12. D.
9	F.	66	O. D. Esarine; conjunctivitis.	21			88 with + 10. D.
10	M.	66	O. S. Smooth; eserine.	22			88 with + 10. D.
11	F.	45	O. D. Smooth; eserine; membrane.	21	88 with + 11. D. \odot + 5.5 D. 180°.	Diagnosis.	88 with + 10. D. \odot + 3 D. 180°.
12	F.	80	O. D. Smooth; eserine.	20			88 with + 8.5 D. 180°.
13	M.	76	O. S. Smooth; eserine; cortical; membrane.	24	88 with + 12. D.	Diagnosis.	88 with + 11. D. \odot + 2.5 D. 180°.
14	F.	64	O. S. Smooth; eserine; membrane.	16	88 with + 10. D.	Diagnosis.	88 with + 10. D.
15	M.	65	O. S. Smooth; eserine; membrane.	22			88 with + 11. D.
16	M.	43	O. S. Smooth.	13			88 with + 10. D. \odot + 5. D. 20°.
17	M.	52	O. S. Cortical; membrane.	21	88 with + 10. D.	Diagnosis. Excited prolapsed iris.	88 with + 10. D. \odot + 2.5 D. 150°.
18	F.	60	O. S. Loss of vitreous; prolapse of iris.	52			88.
19	F.	72	O. D. Cortical; dense membrane.	26			88.
20	F.	60	O. S. Smooth.	21			88 with 9.5 D.
21	M.	61	O. S. Cortical.	20			88 with + 7.5 D. \odot + 3.5 D. 30°.
22	M.	76	O. S. Cortical; prolapse of iris.	22			88 with + 11. D.
23	M.	46	O. S. Cortical; membrane.	19			88 with + 10. D. \odot + 1. D. 45°.
24	F.	19	O. S. Purulent inflammation.	14	88 with + 11. D.	Diagnosis.	88.
25	F.	59	O. D. Cortical.	34			88 with + 10. D.
26	F.	40	O. S. Cortical; dense membrane.	21	Counts fingers.	Diagnosis.	88 with + 12. D.
27	F.	55	O. D. Cortical; striped keratitis; membrane; highly myopic.	43		Diagnosis.	88 with + 1. D. \odot + 3 D. 10°.

88	M.	66	O. D.	Prolapse of iris.	21		Excision of prolapsed iris.	88 with + 12. D. \odot + 185°.
20	M.	76	O. S.	Uneventful.	16			88 with + 11. D.
31	M.	50	O. S.	Uneventful.	17			88 with + 10.5 D.
32	M.	60	O. S.	Membrane.	12			88 with + 12. D.
33	M.	68	O. S.	Leaking anterior chamber; membrane.	31			88 with + 12. D.
34	M.	56	O. S.	Uneventful.	20			88 with + 10. D. \odot + 1.5 D. 180°.
		65	O. S.	Prolapse of iris; membrane.	19			88 with + 5.5 D. \odot + 6.5 D. 15°.
35	F.	73	O. S.	Prolapse of iris; membrane.	21			88 with + 13. D.
36	M.	65	O. D.	Uneventful.	17			88 with + 12. D. \odot + 2.75 D. 15°.
37	F.	76	O. D.	Iritis; membrane.	22			88 with + 11. D. \odot + 1.5 D. 165°.
38	F.	63	O. S.	Old corneal opacity.	14			88 with + 10. D.
39	F.	73	O. S.	Incarceration of iris; leaking anterior chamber.	25			Counts fingers.
40	F.	77	O. S.	Membrane.	20			88 with + 13. D.
41	F.	67	O. D.	Membrane.	21			88 with + 12. D.
42	M.	30	O. D.	Membrane.	19			88 with + 12. D.
43	M.	44	O. S.	Membrane.	40			88 with + 12. D. \odot + 3. D. 30°.
44	M.	65	O. S.	Prolapse of iris; membrane.				88 with + 13. D.
45	F.	27	O. D.	Prolapse of iris.	12			88 with + 13. D.
46	F.		O. D.	Iritis followed by occlusion of pupil.	41	Perception of light.		88 with + 11. D. \odot + 3. D. 45°.
47	F.		O. D.	Uneventful.	15			88 with + 10. D. \odot + 8. D. 180°.
48	M.	62	O. D.	Patient would not stay longer in hospital.	7			88 with + 8.5 D. \odot + 3.5 D. 180°.
49	M.	49	O. D.	Cortical.	21			88 with + 10. D. \odot + 2.75 D. 165°.
50	M.	53	O. D.	Uneventful.	18			88 with + 10. D. \odot + 2.5 D. 180°.
51	M.	53	O. S.	Uneventful.	19			88 with + 10. D. \odot + 3. D. 180°.
52	F.	61	O. S.	Serous iritis.	21			88 with + 10. D.
53	F.	56	O. S.	Membrane; highly myopic.	17			88 with + 2. D.
54	F.	74	O. S.	Membrane.	17			88 with + 12. D.
55	M.	68	O. D.	Prolapsed iris; iritis; membrane.	22			88 with + 8. D. \odot + 5. D. 90°.
56	M.	58	O. S.	Membrane.				88 with + 10. D. \odot + 5. D. 180°.
57	F.	65	O. D.	Old corneal opacity; iritis.	14			88.
					20			Paracenta.

No.	Sex.	Age.	Operation. Incidents. Course of Healing. Remarks.	No. of Days Continued.	Vision before Secondary Operation.	Secondary Operation.	Ultimate Vision.
58	F.	79	O. D. Membrane.	12	18 with + 10. D. \odot + 5. D. 180°.	Discission.	18 with + 11. D.
59	F.	75	O. D. Membrane.	15		Excision of prolapsed iris.	18 with + 10. D. \odot + 5.5 D. 150°.
60	F.	42	O. D. Prolapse of iris; iridochoroiditis.	35			Perception of light.
61	F.	53					
62	F.	53	O. D. Uneventful.	9		Discission.	18 with + 10. D. \odot + 3. D. 180°.
63	F.	54	O. D. Membrane.	16		Discission.	18 with + 10. D. \odot + 3.5 D. 165°.
64	M.	53	Cortical iritis; membrane.	21	18 with + 10. D. \odot + 2.5 D. 15°.	Discission.	18 with + 9. D. \odot + 3.25 D. 180°.
65	F.	62	O. S. Uneventful.	21			18 with + 10. D.
66	F.	60	Loss of vitreous; iritis.	40			18 with + 11. D.
67	M.	64	Lost by suppuration.	24			
68	F.	59	O. D. Pterygium, and atrophy of optic nerve; albumen in urine.	21			
69	F.	54	O. D. Membrane.	14	18 with + 6. D. \odot + 2. D. 145°.	Discission.	18 with + 6. D. \odot + 2. D. 145°.
70	F.	70	O. S. Uneventful.	12			18 with + 10. D. \odot + 4.5 D. 25°.
71	M.	69	O. D. Uneventful.	16			18 with + 12. D.
72	M.	46	O. S. Uneventful.	14			18 with + 8. D. \odot + 6. D. 180°.
73	M.	44	O. S. Uneventful.	16			18 with + 11. D. \odot + 2. D. 30°.
74	F.	72	O. D. Membrane.	12	18 with + 11. D. \odot + 3.50 D. 145°.	Discission.	18 with + 12. D. \odot + 3.50 D. 165°.
75	M.	72	O. D. Uneventful.	11	18 with + 10. D. \odot + 5. D. 45°.	Discission.	18 with + 10. D. \odot + 2 D. 15°.
76	M.	51	O. S. Membrane.	11			18 with + 13. D.
77	M.	87	O. S. Prolapse of iris on 6th day; iritis; membrane.	40			18 with + 10. D.
78	F.	61	O. D. Conjunctivitis, with secretions, both.	23			18 with + 10. D. \odot + 2. D. 180°.
79	M.	70	O. D. Loss of vitreous.	48			18 with + 11. D. \odot + 1.50 D. 180°.
80	F.	72	O. D. Uneventful.	38			18 with + 10. D.
81	M.	49	O. S. Uneventful.	10			18 with + 10. D.
82	F.	66	O. S. Uneventful.	30			18 with + 11. D.
83	F.	68	O. S. Membrane.	28			18 with + 11. D.
84	M.	68	O. D. Slight incarceration of iris.	14	Counts fingers.	Discission.	18 with + 11. D.
85	F.	55	O. S. Uneventful.	14			18 with + 10. D. \odot + 0.5 D. 180°.
86	M.	59	O. S. Uneventful.	14			18 with + 10. D. \odot + 5. D. 15°.
87	M.	63	O. D. Prolapse of iris.	43			18 with + 8. D. \odot + 5. D. 15°.
88	F.	62	O. D. Uneventful.	21			18 with + 7. D. \odot + 3.5 D. 180°.
89	F.	42	O. S. Uneventful.	26			18 with + 11. D. \odot + 1.25 D. 180°.
90	F.	68	O. D. Uneventful.	28			18 with + 13. D.

91	M.	48	O. S.	Uneventful.		16			
92	M.	78	O. S.	Uneventful.		17			
93	F.	70	O. D.	Incarceration of iris.		21			
94	F.	84	O. S.	Slight incarceration of iris, gradually developing into prolapse.					Excision of prolapsed iris.
95	F.	71	O. S.	Uneventful.		21			
96	M.	75	O. D.	Uneventful.		15			
97	M.	72	O. D.	Uneventful.		14			
98	M.	58	O. S.	Uneventful.		20			
99	M.	68	O. S.	Eye lost by suppuration.		35			
100	M.	75	O. D.	Prolapse of iris occurred on the 8th day; no inflammation.		21			
101	F.	57	O. S.	Uneventful.		20			
102	M.	65	O. S.	Uneventful.		21			
103	F.	74	O. D.	Uneventful; removed degenerated capsule with iris forceps after extracting lens.		21			
104	F.	71	O. S.	Slight incarceration of iris.		21			
105	M.	51	O. D.	Uneventful.		18			
106	F.	76	O. D.	Uneventful.		14			
107	F.	74	O. D.	Uneventful.		10			
108	F.	73	O. D.	Uneventful.		14			
109	M.	73	O. D.	Uneventful.		16			
110	M.	77	O. D.	Iritis and prolapse of iris.		28			
111	F.	79	O. S.	Uneventful.		21			
112	F.	44	O. D.	Uneventful.		21			
113	M.	69	O. S.	Uneventful.		21			

"COMBINED EXTRACTIONS."

1	F.	105	O. S.	Colored woman from Williamstown, Mass; cocaine; modified Graefe; has glaucoma absolute of fellow eye.	28				
2	F.	53	O. S.	Escher; preliminary iridectomy; membrane; other eye previously lost after a simple extraction.	23				Discission.
3	M.	71	O. S.	Iridectomy after extraction on account of bad behavior of iris; cocaine.	23				
4	F.	56	O. S.	Ether; modified Graefe; colored woman; membrane; no self-control.	20				Discission.
5	M.	28	O. S.	Rheumatism and eczema, asthma and bronchitis; cocaine; modified Graefe; membrane; iris.	77				Discission.

AN INTERESTING CASE OF REFRACTION.

FRANK VAN FLEET, M.D.

Peter M.—, age —, occupation stone-polisher, admitted January 30, 1894. Diagnosis paralysis right external rectus. Patient has marked convergent squint. Is unable to move right eye outward. Has occasional diplopia. Is unable to work or even move about readily because of confusion. Has been under treatment in several dispensaries and ophthalmic institutions in this city.

V. D. = $\frac{1}{80}$.

V. S. = $\frac{1}{8}$ Jaeger 9 at 8" with difficulty.

Fundi indistinct. Denies ever having venereal disease.

Given iodide of potassium, grs. x., t. i. d.

February 17th.—Has been taking K. I. in increasing doses since last note. Condition unchanged. Says he has been taking medicine similar to this for months, without effect, at other institutions and would like to have glasses for reading and stop treatment.

V. D. = $\frac{1}{80}$.

V. S. = $\frac{1}{8}$ +.

Ophthalmometer shows, O. D. Astigmatism against rule

3. D. $\frac{180^\circ}{90^\circ}$

Ophthalmometer shows, O. S. Astigmatism against rule

3. D. $\frac{165^\circ}{75^\circ}$

Right eye uncertain because of difficult fixation.

V. D. $\frac{1}{80}$ not improved.

V. S. = $\frac{1}{8}$ + 1, with + 3.50 D. cyl. ax. 165° — 2.50 D. s. = $\frac{1}{8}$.

O. S. Jaeger 2, at 8" with + 3.50 D. cyl. ax. 165° with difficulty. As the ophthalmoscope and retinoscopy seemed to confirm the above, there was ordered :

O. D. + 3.50 D. cyl. ax. 180° — 2.50 D. s. for distance.

O. S. + 3.50 D. cyl. ax. 165° — 2.50 D. s.

For near, O. D. + 3.50 D. cyl. ax. 180° O. S. + 3.50 D. cyl. ax. 165° .

February 26, 1894.—Has worn glasses constantly for over a week. Feels better. Iodide of potassium stopped.

March 15, 1895.—Has broken his glasses and wants to have same prescription renewed.



V. D. = $\frac{1}{8}$ —with + 3.50 D. cyl. ax. 180° \ominus — 2.50 D. s.
= $\frac{1}{8}$.

V. S. = $\frac{1}{8}$ —with + 3.50 D. cyl. ax. 165° \ominus — 2.50 D. s.
= $\frac{1}{8}$.

Jacger 1, 9" to 15" with O. D. + 3.50 cyl. ax. 180° . O. S. + 3.50 D. cyl. ax. 165° .

Optic axes parallel. Has binocular vision without diplopia. General health very much improved. Has taken no medicine in past year and has been able to work steadily.

A CATARACT EXTRACTION FOLLOWED BY IRIDO-CYCLITIS WHICH YIELDED TO LARGE DOSES OF QUININE, ALSO ONE OF PLASTIC OPERATION WITH CAUSES OF FAILURE AND FINAL SUCCESS.

FRANK VAN FLEET, M.D.

CASE I. Mrs. W.—, aged 44 years, living at Staten Island. Admitted July 25th. General health good.

O. D. Immature cataract, pupil reacts wells. Vision = $\frac{2}{20}$ field good. Anterior chamber shallow.

O. S. Incipient cataract V = $\frac{1}{20}$ myopia 13 D.

Urine normal.

July 26th.—Foster's operation for ripening. Eye bandaged and patient put to bed.

31st.—Eye quiet V = $\frac{1}{20}$. Simple extraction under cocaine. Iris partially prolapsed but replaced and eye bandaged.

August 2d.—Bandage removed. Ant. chamber re-formed.

4th.—Iris prolapsed, eye red, chemosis, lids swollen, prolapsed iris excised. Atropine instilled, leeches to temple, sulphonal given and hot water applied.

5th.—Great pain, hot water stopped and iced cloths constantly, atropine continued.

6th.—Lids much swollen, considerable chemosis and redness, great pain, exudation around wound, cornea somewhat infiltrated. Patient etherized and peroxide of hydrogen instilled, iced cloths for five hours then bandaged.

7th.—Some secretion, less swelling of lids and chemosis. Eye very red, some exudation in and around wound. Very painful. Treatment continued.

8th.—Considerable chemosis. Lids swollen. Wound closed. Blood in anterior chamber. Cornea hazy. No exudation around wound. Eye cleansed, iced cloths applied constantly. Atropine every four hours.

10th.—Some swelling of lids. Very little secretion. Wound closed. Eye very red. Iced cloth stopped at night.

13th.—Much better.

16th.—Eye still very red. No chemosis. Anterior chamber re-formed and full of blood. Cornea clearing. Treatment continued.

- 22d.—No swelling of lids. No chemosis. Eye very red. Cornea clear. Pupil filled with bloody exudate.
- 23d.—Iced cloths stopped. Bandage applied. Atropine continued.
- 26th.—Great pain. Eye very red. Some chemosis. Cornea again hazy. Pupil still full of bloody exudate. Hot water again applied. Pain so severe as to require anodynes several times daily.
- 27th–30th.—Condition has continued. Pain neuralgic in character requiring anodynes.
- September 1st.—Quinia sulph grs. v A.M., grs. v at noon, and grs. x at night.
- 3d.—Eye red. Iris of dirty green color. Pupil occluded, very little pain.
- 8th.—Eye nominally white. Exudate nearly absorbed. Pupil very small. No pain. Treatment contained.
- 20th.—Has continued quinia sulph. Eye quiet. V. P. L. Discharged.

Remarks.—This patient was highly myopic. The operation was carefully done with every antiseptic precaution. The iris prolapsed, but was replaced without difficulty. At the end of forty-eight hours the bandage was removed. Anterior chamber had re-formed, iris was in place and eye quiet. At the second dressing, four days after operation, the iris had prolapsed and severe irido-cyclitis had set in. Prolapsed iris removed, but inflammatory trouble continued without abatement, with great ciliary neuralgia for a month despite active treatment.

September 1st.—Sulphate of quinia given in quantity of twenty grains a day with marked improvement from the beginning. This was continued for twenty days, making in all four hundred grains of quinine without any symptoms of cinchonism.

Query. Coming from a malarial district, might not this severe inflammatory reaction have been the result of a malarial infection?

CASE 2. Notes by Dr. W. R. Thompson, second assistant house surgeon.

October 31, 1894. Alice Vernon. Age 8 years.

Diagnosis. Ectropion left upper lid.

History. Twenty months ago patient fell on a stove during an epileptic attack, burning her head near the left eye. The wound did not seem a bad one at the time, but on healing it contracted more and more until the lid was turned out. Was operated on in Brooklyn four months ago and tension on lid somewhat relieved, but trouble came back again.

Present Condition.—A large irregular cicatrix extending from the bridge of the nose over to the hair over the left ear and involving the whole of the forehead on this side. The eyebrow is entirely gone, with the exception of a few hairs in the cicatrix above the outer canthus. A firm contraction extends from the upper lid to the brow and the lid is much shortened, so that the conjunction of the outer half of the lid is everted, and is thickened, red, and angry looking and covered with a scanty muco-purulent discharge. The conjunction of the lower lid is inflamed and the ocular conjunction also injected. There is a small, shallow, irregular ulcer on the lower outer side of the cornea.

General condition.—Mentally unsound ; is full of all sorts of mischievous tricks and does not seem to understand when corrected. Has been subject to epileptic attacks since a baby.

Treatment.—Cleansing.

November 2d.—Has had a number of fits and is too much depressed for operation. Seguin's Bromides $\frac{3}{4}$ ss q. 3. h.

November 8th.—Much better. Dr. Van Fleet operated. Made an incision from over inner canthus to a point just in front of the ear, removing cicatricial tissue, separating tarsal margin from the brow. The conjunctival surface of the lid still remaining everted a suture was passed under the skin, commencing at a point about 12 mm. above the upper margin of the wound, running down and coming out on the conjunctival surface of the lid, through the tarsal cartilage near its upper border, then piercing again the cartilage it was made to pass up, emerging through the skin over the brow near the first point of entrance. The two ends were then tied tightly over a quill, drawing the upper tarsal cartilage into its proper position, and the tarsal margins of the upper and lower lids united with three sutures. Then, taking a flap from the cheek, it was placed in the denuded surface and retained in position by forty-six sutures. The skin was freely dissected, so that when the flap was in position it was entirely free from tension. When dissecting the flap above the ear, a plexus of blood-vessels was encountered which bled profusely, in checking which considerable time was consumed. A dressing of bichloride gauze was applied. There was considerable shock after the operation but patient rallied during the night.

November 10th.—Dressed by Dr. Van Fleet. Flap slightly discolored just above and to outer side. Rest doing well. Washed with bichloride and dressing reapplied.

November 11th.—End of flap looks sloughy. Removed quill and supraorbital suture.

November 14th.—Dressed with iodoform and bandaged as before.

November 17th.—Sloughing portion of flap removed with scissors.

November 20th.—Wound healing.

December 2d.—Stitches holding lids together having sloughed they were again sutured to prevent contraction from everting the lid.

December 3d.—Patient picked stitches out during night—re-applied by House Surgeon Dr. Kinney.

December 7th.—Dr. Van Fleet again introduced long suture through tarsal cartilage tying over quill over brow as in first operation, as lid seemed inclined to evert.

December 16th.—As quite a large granulating surface was present on the upper lid where flap had sloughed, and as it was feared that the contraction of this wound in healing would tend to again evert the tarsal cartilage, Dr. Kinney, at the request of Dr. Van Fleet, did a skin-grafting, taking grafts from the leg.

December 28th.—Several of the grafts having grown the lid looks very well.

January 2, 1895.—Wound entirely healed. No eversion.

January 10th.—Discharged greatly improved.

Remarks by Dr. Van Fleet.—While dissecting up the flap, as stated in the foregoing report, considerable hemorrhage occurred. As the bleeding was oozing in its character and could not be controlled by means of torsion, very hot water was employed to check it. It was controlled with difficulty. Would this be sufficient to account for the sloughing of the flap? Or was it likely due to the lowered vitality of the patient, caused by the large quantity of bromide found necessary to control her epileptic seizures? There was no tension on the flap and every possible antiseptic precaution was used to prevent infection. I append two photographs. One shows the patient after operation, the other the condition when discharged. They were taken by Dr. E. S. Thomson, first assistant house surgeon.

I regret that none was taken before operation.

GLAUCOMA, FOLLOWING CATARACT EXTRACTION AND KERATONYXIS.

FRANK N. LEWIS, M.D.

GLAUCOMA occurring in an eye from which a cataract has been removed, is fortunately not very frequent. Quite a number of cases have been reported, and probably there are other cases which have not been reported. But, considering the great number of cataract extractions, this condition is comparatively rare. Where it does occur the resulting vision is usually poor, if it is not altogether lost. In most cases there has been found to be present an incarceration of the iris or lens-capsule, or both. Different theories have been advanced as to how this incarceration may be a cause of glaucoma in an eye, from which the lens has been removed. That this is a cause is probably not to be denied, but that there may be other causes as well is doubtless true. Some of the cases reported have shown much thickening of the capsule. In some there has been iritis, before glaucomatous symptoms have appeared. The length of time after the extraction or after keratonyxis when glaucoma commenced, has varied from a few months to several years. How one can guard against this unfortunate state is not quite certain. If incarceration of iris or capsule is an important cause, it might seem best in every case where this occurs to operate for its release, as a preventive measure. But where an eye, after cataract extraction, has good vision and is free from irritation, a conservative oculist will hesitate to operate for a condition which, in some cases, does not produce trouble. In the case here reported there was incarceration of the capsule, and this, no doubt, had much to do with the starting of the glaucoma. Other causes may have been at work as well. The history of the case is as follows :

Joseph M——, 57 years of age, a Hebrew, had been coming to the clinic for a year or more, previous to his admission. His general condition was not good. There was a cough and dullness over the apex of each lung. An incipient cataract was present in each eye, which showed little change from time to time. He was advised to wait, as the vision of the right eye remained fairly good.

August 14, 1894, the vision of the left eye having been reduced to $\frac{1}{200}$, he was admitted to the hospital. There was nothing unusual about the eye; the opacity of the lens was of a diffuse character, not showing any striated opacity. A somewhat broad iridectomy upward was done with Förster's massage of the lens. The wound healed readily, and there was little reaction. The patient left hospital after ten days, the eyeball being white.

On September 29th he was again admitted, and the opacity of the lens was then quite complete. The vision was then simply perception of light, and there was a good field. The lens was extracted, a peripheral capsulotomy being done. After removal of the lens, the patient, who was quite nervous, squeezed the eye, so that some vitreous was evacuated. Eye was dressed in the usual way with a bandage. The wound healed with little reaction; pupil was kept well dilated with atropine, and the patient was discharged in two weeks. There was considerable soft lens matter in the pupil at this time, and the capsule was, no doubt, engaged in the wound, but the eye was quiet. The vision was perception of light.

Three weeks later patient was again admitted, and a keratonyxis was done with a knife-needle, a vertical opening being made in the capsule. Some cortical matter was released from the capsule as if it had been enclosed, as in a bag. Following this operation there was considerable iritis, which slowly subsided. The soft cortical matter was gradually absorbed. The capsule became whiter and thicker, and its attachment to the cornea quite marked.

On December 17th the eye had recovered from the iritis, the pupil was fairly well dilated, and there was an opening in the capsule. Vision = $\frac{4}{8}$. Up to this time there was no increase of tension, nor was there any for some time after. The patient was discharged, but came to the clinic at intervals. The eye remained quiet, and vision continued as before.

February 1, 1895, the patient was seen, not having been to the hospital for three weeks previous. There was redness of eyeball, T. + 2, V. = $\frac{4}{80}$, contraction of the visual field on the nasal side and some cupping of the optic disc. Pain was present, but not severe.

February 4th, an operation was done to release the capsule from the cornea. Cocaine was used, and a small section was made with a Graefe knife. Knowing the nervous condition of the patient, and fearing a loss of vitreous, the section was not entirely completed at first, a narrow bridge being left. It was well that this was done, for by the squeezing of the eye, some fluid vitreous was forced out, and had a complete section been made, probably a large part of the vitreous would have been lost. After allowing the patient a moment's rest, following the pain, the section was completed, and in so doing the capsule was cut, releasing it from the cornea. An interesting point at this operation was the effect of the cocaine on the tension. An 8 % solution was used, and after four or five instillations the tension became much reduced, although there was considerable congestion, a condition in which cocaine usually does not act readily. The eye was bandaged. The healing of the corneal wound after this operation was quite satisfactory, but a considerable iritis with some exudation and hemorrhage into the pupil followed. Eleven days after operation there seemed to be slight increase of tension again, and pilocarpine was employed for a few days. Since then there has been no increase of tension. The iritis slowly subsided. March 2d, the patient was discharged.

Four weeks later the eye remained quiet, was well rounded out, and there was vision of $\frac{2}{20}$. There is no indication of impending phthisis of the globe, and while, as far as practical vision goes, the eye is a loss, yet by the last operation all has been accomplished that could reasonably be expected, viz., reduction of tension and saving of the eyeball.

ACCOMMODATION IN THE LENSLESS EYE—TO WHAT IS IT DUE?

A. EDWARD DAVIS, A.M., M.D.

MY attention was first called to this very interesting physiological question by a remarkable case of this kind which occurred in my private practice. On looking over the literature of the subject, I find the question of "accommodation in the lensless eye" still an unsettled one. Leading authorities—Helmholtz, Donders, Mannhardt—on the one hand, asserting that the lensless eye is devoid of accommodation, Donders * declaring that his "*investigations had led him to the conviction, that in aphakia not the slightest trace of accommodative power remains.*" On the other hand, eminent authorities—Förster, Woinow, von Græfe, Loring—contend that accommodation does exist in aphakial eyes, Loring † affirming "that occasionally a considerable, if not a large degree of accommodation may exist, even in a lensless eye."

Not only have these eminent authorities disagreed on the abstract point "of accommodation, or no accommodation in the lensless eye," but, unfortunately, those who have agreed on one side or the other, do not agree as to how, if present, it is brought about; or how, if not present, it still appears to be present. Undoubtedly the absence of the same or uniform tests accounts for a great deal of this difference of opinion. That some lensless eyes possess the power of adjusting themselves to seeing objects at different distances (call it accommodation, or what you will), with one and the same glass, and that glass held at one distance from the eye, there is no question in my mind whatever. *How* this adjustment or accommodation is brought about is quite a different question.

Besides my own case, I am able, through the courtesy of Dr.

* Donders, *Accom. and Refrac. of the Eye*, 1864, p. 320.

† Flint, *Physiology of Man*, 1875, vol. v., pp. 110, 111.

Webster, to report a similar case which occurred in his private practice.

CASE 1. Mr. E. C., aged 42, chef. On January 27, 1894, I removed a sclerosed or "black" cataract from his right eye, doing an iridectomy upward at the same time. His vision at time of operation was: R. E. $\frac{7}{8}$, L. E. $\frac{7}{8}$. Jaeger No. 12 at ten inches R. E., and Jaeger No. 9 at ten inches L. E. Though his vision was this good he could not recognize members of his family or friends on the street, had not worked for five years, and insisted on the operation being done. February 21st, about three and one half weeks after the operation, the ophthalmometer showed astigmatism with the rule 4.50 D., axis $90 + 180 -$. April 20th, less than three months after the operation, the ophthalmometer showed absolutely no astigmatism. V. R. E. = $\frac{7}{8}$ (Snellen) with + 11.50 D. He read Jaeger No. 1 at ten inches with + 15.50 D. These glasses were accordingly ordered, + 11.50 D. for distance, and + 15.50 D. for reading. I saw nothing more of the patient till six months later, October, 1894. The reason for his visit to me at this time was, not because the eyes were not doing well but because he thought he might be "straining" them; as he informed me he had been using his distance glasses *all the time*, both for distance and reading, having discarded his reading glasses after a few weeks' use. I doubted the truth of his statement at first, never having seen such a case before. On testing his vision I found he could, with + 11.50 D., his distance glass, which I took the precaution to measure and verify, read $\frac{7}{8}$ (Snellen); and with the same glass, held at the same distance on nose, he read Jaeger No. 1 from fourteen to eighteen inches. October 8, 1894, I presented the case in person before the New York Ophthalmological Society (before which he kindly consented to go). The members of the society were divided in their opinions as to how the patient was able to accommodate for the near point with his distance glasses on. February 4, 1895, I saw the patient again. He still read Snellen $\frac{7}{8}$ —, and with same glass Jaeger No. 1 from eight to twenty-two and one half inches. This was such a remarkable increase in his relative range of accommodation for the near point, that I decided to make a thorough examination of his eye in every respect, accurate measurements of his cornea, and to ascertain, if possible, how such a result could be brought about. I accordingly subjected him to the following tests:

Subjective tests.—1 (a) Acuteness of vision for distance and near point, with the distance glasses; (b) same with upper lid

held up ; (c) same with a few drops of cocaine instilled and speculum to hold lids open ; (d) adding weak plus or minus glasses to his distant glasses and noting changes in acuteness of vision ; (e) to repeat the above tests with the opposing eye uncovered, and with the visual lines converging. 2. Tested his acuteness of vision for a distant point of light (after Donders' method), under the five conditions imposed in test No. 1.

Objective tests.—1 (a) Measurement, with the ophthalmometer, of the radius of curvature of the two chief meridians of the cornea at the point where the visual line intersects same ; (b) the same measurement five degrees to the outer side of this point, which was close to the apex of the cornea in each of the cases here reported, as the angle alpha was positive and about five degrees in each. 2 (a) With the Placido disc * removed from the cylinder of the ophthalmometer, and with the patient looking five degrees to the inner or nasal side, to note if any changes were made in the relative position and size of the corneal images when the eye changed from looking in the distance to a near point, † *the eye not changing its direction* ; (b) the same test with lids held open with a speculum ; (c) with the opposite eye uncovered both of the above tests were repeated. 3. Ophthalmoscopic measurements of the fundus were made to see if any change in depth occurred when the eye changed from a state of rest to accommodative efforts. 4. The size and shape of the pupil, if clear, or partially filled with membrane, activity, etc., were noted.

All of the above tests were repeated with the eye under the influence of a mydriatic.

The results of these tests in my case were : 1. V. R. E. = $\frac{3}{8}$ (Snellen), with + 11.50 D._s ($\frac{1}{3}$). With the same glass, and without moving it on his nose, he read Jaeger No. 1 from eight to twenty-two and one-half inches, holding the type in the usual reading position, that is, slightly below the centre of the glass. He did not tilt his head or the glasses. When the type was held up higher, directly in front of glass, he could not read quite so well as when he held the print a little lower, as

* Meyrowitz replaced this with a smaller disc placed back of the arc with the correct numbering and an indicator, so that the axis could be ascertained.

† The distant object at which the patient looked at in this test was the window of a house reflected from a French-plate mirror, which I had fixed on a revolving stand just back of me and facing the patient and window at which the ophthalmometer was placed. The houses reflected by the mirror were about one hundred feet distant, the eye observed being perfectly relaxed, therefore, when looking at them. The near point was a fine, black dot, 2 mm. in diameter, near the end of a narrow strip of white paper, which I pasted on the end of the tube, turning the strip of paper at a right angle to the tube and letting the end extend far enough to be five degrees from the centre of the tube. I pasted two of these slips on the tube, one to the side, one above. The distance from the end of tube to the observed eye was eight inches.

the print is held when reading naturally. I repeated this test time and again, and had Dr. M. L. Foster present on two occasions. Raising the lid up with the finger or with speculum made no change in his acuteness of vision whatever, either for distance or near. With the eye scopolamized ($\frac{1}{16}$ per cent. solution instilled every five minutes for thirty-five minutes, then a wait of one half hour), the distant vision was still $\frac{1}{8}$ —, while the relative range for the near point, Jaeger No. 1, was nine to twenty-one inches; his relative range of accommodation for the near point was reduced but two and one half inches. When the left eye was covered in these tests, it was seen to turn in and the pupil to contract for the near point. Leaving the left eye uncovered made no change in any of the tests. A +.50 D. spherical glass added to his distant glass made him see worse for the distance; with a —.50 D. spherical added he saw the same, while a —.75 D. spherical made him see worse. From this, it would seem that he had accommodative power to the extent .50 D., even for the distance. 2. Having the patient look at a point of light (a portion of lamp flame seen through a round hole, 3 mm. in diameter, in a piece of cardboard) twenty feet distant with his distance glasses on and adding a + $\frac{1}{8}$ ($\frac{1}{8} \subset -\frac{1}{8}$) made no change in the circle of light, neither did a + $\frac{1}{16}$ (.25 D.). A + $\frac{1}{8}$ (.50 D.) elongated the circle of light in the vertical meridian. It took a — $\frac{1}{8}$ to elongate the circle of light in the horizontal meridian. An effort of accommodation elongated the circle of light in the vertical meridian, just as the + $\frac{1}{8}$ spherical had done. When the lid was held up with finger, or with speculum, and when the eye was scopolamized, the test with the distant point of light was wholly unsatisfactory and contradictory. With the left eye uncovered and the right converging in the line of light, the tests were about the same as when the left eye was covered.

Objective tests.—1. The ophthalmometer showed him to have absolutely no astigmatism. The radius of curvature at the point where the visual line intersected the cornea was 8.9 mm.; at the apex 9 mm. When the patient looked five degrees to the inner side of the tube (relative to the eye, the nasal side), just by the end of slip of paper I had pasted on the tube, into the distance, I approximated the images of the mires in the horizontal meridian so that they just touched. Then, without changing the direction of his eye, I had him focus on the black dot on the end of strip of paper. With his greatest effort at accommodation the images overlapped to the extent of one half diopter perhaps. The cornea moved forward a little, too, as was shown by the images getting out of focus, and the instru-

ment had to be pulled slightly away from the eye in order to get them in perfect focus again. Or, if I had him focus on the black dot first and approximated the images, then let him look in the distance, the images separated slightly and the instrument had to be pushed toward the eye to get it in perfect focus again. Letting the patient look still in the same direction, but turning the arc of the instrument in the vertical meridian, and repeating the above experiments, the results were just reversed; that is, if I approximated the images while he was looking in the distance, then had him focus on the near point, the images separated slightly; but, if the images were approximated while he focused on the near point, and then looked in the distance, they overlapped about one half diopter. The same changes took place when the lids were held open with a speculum, and even when the ciliary muscle was paralyzed with scopolamine. The changes produced in his cornea must, therefore, have been produced by the action of the external muscles of the eye.

2. It was impossible to detect any change in the depth of the fundus of the eye with the ophthalmoscope when the eye changed from a state of rest from looking in the distance with opposite eye to a state of accommodation. The fundus of the eye was normal, with the media perfectly clear. 3. The shape of the pupil is an irregular oval, from the iridectomy, and free from membrane, except a very narrow margin at the edge, though, when I reported him to the New York Ophthalmological Society, and before I had made a critical examination, I had thought there was more membrane present. The transverse diameter of his pupil is $3\frac{1}{2}$ mm., the vertical about 7 mm. (see Fig. 1, A). B., Fig. 1, shows pupil dilated and some remains of membrane at periphery.



FIG. 1.

Case 2. Master W. O. B.,* aged 13. School boy. Dr. Webster saw this patient first in Nov., 1891, when ten years of age, brought to him for double congenital cataract. The patient had already had eight dissections done on

* This case, a private patient of Dr. Webster's, has been reported by him in a series of cases as: *A Case of Congenital Cataract, both Lenses Removed by Operation. Arch. Pediatrics*, New York, Nov., 1893, p. 932.

the left eye, the first one in Nov., 1890. When Dr. Webster saw him his vision was: R. V. = $\frac{3}{8}$, no improvement with glasses. L. V. = $\frac{2}{8}$, with + 10 D. November 28, 1891, Dr. Webster did a discission of the membrane in the left eye. January 19, 1892, L. V. = $\frac{3}{8}$ with + 13 D.

"As the patient saw with the right eye about as well without a glass as he saw with the left with one, I concluded that he might as well go about without glasses for distant vision, and I gave him for reading, Right, plain glass. Left, + 16 D.

"March 14, 1893.—The patient returned for further advice, and I found he was wearing the glasses *all the time*, which I had prescribed for reading only. On testing him I was surprised to find that with his left eye, with his glass, + 16 D. he had vision $\frac{3}{8}$, while with the same glass he read Jaeger No. 1, at fourteen inches easily. This looked as though his aphakial eye still retained its power of accommodation."

Subsequently the right lens was removed by discission and *linear incision*, but no accommodation was observed, though his vision with a + 13 D. was $\frac{3}{8}$.

I saw this patient first, March 16, 1895, and subjected him to the same tests as in my own case, with the following results: 1. V. R. E. — $\frac{2}{8}$, with + 13 D. V. L. E. $\frac{3}{8}$ —, with + 16 D. Jaeger No. 8, at ten inches, right; Jaeger No. 1, from ten to eighteen inches, left, with his distance glass, not moving it, and looking directly through its centre. His accommodation for the near point for the left eye had increased to ten inches from fourteen inches, since Dr. Webster saw him two years previously. His right eye, however, not only had no accommodative power for near point, but distant vision in it had decreased from $\frac{3}{8}$ to $\frac{2}{8}$, due to a membrane filling pupil. Holding the lid up with the finger, or with speculum, or even paralyzing the left eye with scopolamine did not change his vision for the distance or near point, he still seeing $\frac{3}{8}$ — in distance, and Jaeger No. 1, ten to eighteen inches for the near point, but not quite so easily as before. With the right eye uncovered he could read more easily, but no better. Both + and — .50 D. spherical glasses added to his distant glass, made him see worse in the distance, especially the — .50 D. 2. Looking at a distant point of light and adding a + $\frac{1}{3}$ or — $\frac{1}{3}$ to his distance glass had no effect, neither was he positive of a change in the circle of light with a + or a — $\frac{1}{10}$ (.25 D.). A + $\frac{1}{8}$ (.50 D.) elongated the circle of light into a vertical oval; a — $\frac{1}{8}$ (.50 D.) elongated the circle of light into a horizontal oval. An effort at accommodation elongated the circle of light slightly in the vertical meridian. Holding the upper lid up had but little effect in this test, but when the eye was under the mydriatic

action of scopolamine, the tests for point of light were unsatisfactory.

Objective tests.—1. The ophthalmometer showed left eye to have astigmatism with the rule, 3 D. axis $65 + 155 -$. The radius of curvature of the meridian at 155 was 8.5 mm., at 65 it was 7.9 mm. At the apex of the cornea the radius of curvature of the meridian at 155 was 8.5 mm., at 65 it was 7.85 mm. When this patient looked in the distance then focussed for the black dot on the end of paper, under the same conditions as in Case No. 1, there was absolutely no change in the relative positions or size of the corneal images. Furthermore, the images of the mires remained in perfect focus, showing that the cornea had not moved forward or backward. Leaving the right eye covered or uncovered made no difference in the tests. 2. The ophthalmoscopic examination was the same as in Case No. 1—negative, except to show that the fundus of the eye was normal and media clear. 3. Pupil circular (perhaps slightly oblong in the vertical meridian), active, $3\frac{1}{4}$ mm. in diameter, but considerably incroached upon at the inner side by a crescentic band of membrane, giving it somewhat the character of a stenopæic slit. This slit was 2 mm. wide and $3\frac{1}{4}$ mm. long, and was crossed by two very fine threads of membrane, horizontally (see Fig. 2, A). When the pupil was widely dilated it was filled up entirely by a dense membrane, except the small central opening already described (see Fig. 2, A'.)

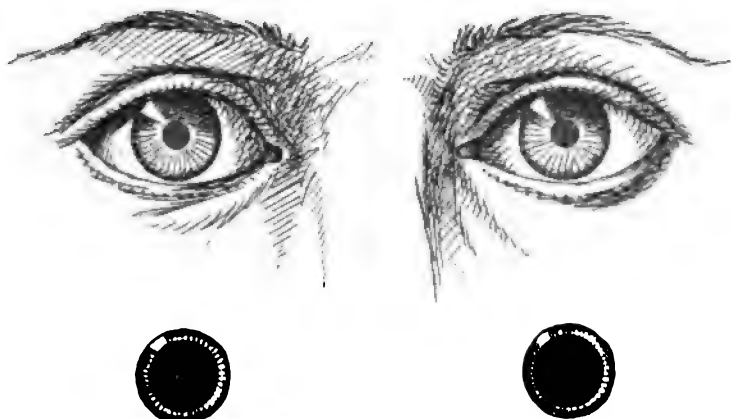


FIG. 2.

Such is the report of the two cases. The question, "*How* was the accommodation brought about in these cases?" pre-

sents itself for consideration. Before giving my own views, I wish, first, briefly, to present the views of some former writers on the subject. Ramsden and Horne* were among the first to examine aphakic eyes for accommodation. They were of the opinion that the accommodative power present in such cases was due to the cornea becoming more curved and moving forward at the same time. Thomas Young† did not believe there was any accommodation left in the lensless eye, but was only tolerably well satisfied with his tests in proving its absence. Von Graefe‡ was of the opinion that the aphakic eye retained some accommodative power. Helmholtz and Donders were quite positive that the lensless eye retained no accommodative power, and Donders* declared himself very forcibly in his text-book on this subject, claiming that *not a trace* of accommodative power remained in such cases. And later, in *Graefe's Arch. of Ophthal.*, xix., p. 63, he still holds to this view. I do not consider Donders' tests, however, as conclusive, as the two which he based his conclusions on mainly were both *subjective*. To wit: 1. That an aphakic eye when accurately fitted for a distant point of light will see it as a circle, and when the patient makes the greatest accommodative efforts the shape of the light is not changed, but is only made smaller concentrically, due to a contraction of the iris; on the other hand, when a weak plus or minus glass ($\frac{1}{80}$) is placed before the eye, with its proper correction on, the circle of light is converted into a vertical or a horizontal oval. 2. That the acuteness of vision, with the distant-glass on, should be the same in a certain or stated interval, *e. g.*, $\frac{1}{2}$ for distance and $\frac{1}{4}$ for some near point. By these two requirements of Donders, then, both of my cases had accommodative power left; for, as regards the first requirement, both, by accommodative effort, could convert the distant circle of light into a vertical oval. Furthermore, in each case it took as strong a glass as $+\frac{1}{80}$ to produce a like effect, and $-\frac{1}{80}$ to convert the circle into a horizontal oval (see test No. 2 above in each

* Cited in *Graefe-Sämisch Augenheilk., Path. Therap.*, vol. v., p. 443.

† Cited in *Graefe-Sämisch Augenheilk. Path. Therap.*, vol. v., p. 444.

‡ *Loc. cit.*, p. 444. Also original article, *Graefe's Arch. f. Ophthal.*, Bd. II., Abth. i., p. 188.

* Donders' *Accom. and Refrac. of the Eye*, p. 320.

case). As to his second requirement: Case I. read with the same glass, $+11.50$ D., Snellen X. at twenty feet, V. at ten feet, and Jaeger No. 1 at eight inches. Case II. read with the same glass, $+16$ D., Snellen XX. at twenty feet, X. at ten feet, and Jaeger No. 1 at ten inches. Another case, reported by Dr. Silex, which will be referred to again, complied with both of Donders' requirements, so that it may be taken as proven that Donders' tests were wholly inadequate to decide the question at issue.

In 1872 Professor Förster,* of Breslau, reported a series of twenty-two cases of apparent accommodation in aphakial eyes. They ranged in age from 11 to 74 years, the younger patients having more accommodative power than the older ones. His experiments were not decisive, however, as he did not leave the distance glasses on when he tested for the near point. Förster was of the opinion that the accommodative power present in these cases was due to the cornea becoming more curved. This was more or less of an assumption on his part, as he did not make the proper objective tests to prove his statement. However, that the curve of the cornea can be changed, by accommodative effort, to a slight extent at least, in the lensless eye, is shown by my case. In the normal eye the change in curvature of the cornea, by accommodative effort, is in some cases very marked. The most marked case of this kind that I have seen occurred in the person of Dr. C. H. Johnson, a former House-surgeon at the Manhattan Eye and Ear Hospital. The ophthalmometer showed him to have ordinarily an astigmatism $.50$ D. ax. $90 + 180 -$, both eyes. He could, however, without in any way changing the direction of his eye, voluntarily, by efforts at accommodation, change this in the right eye to 2 D., and in the left to 1.50 D. He was able to do this while the upper lid was held up with the finger, showing that it was not due to lid-pressure. He did this many times, and the same change was observed by a number of the staff at the hospital. Desiring to know if this change was due to the action of the ciliary muscle or to that of the external muscles of the eye, I wrote to Dr. J. M. Ray,

* *Klin. Monatsbl. f. Augenheilk.*, Erlangen, 1872, B. X., p. 39 et seq.

of Louisville, where Dr. Johnson now resides, to put Dr. Johnson's eyes under the influence of a mydriatic (the doctor permitting), and in that way eliminate the question of the ciliary muscle. I give his report :

"V. R. E. = $\frac{2}{8}$; V. L. E. = $\frac{2}{8}$. Ophthalmometer shows astigmatism with the rule .50 D. ax. $70 + 160 - \text{Rt.}$; $90 + 180 - \text{Lt.}$ When he made an effort at accommodation without changing the direction of his eye, the astigmatism can be seen to go up to 2 D. in Rt., and 1.50 D. in Lt. Scopolamine, four instillations of $\frac{1}{4}$ per cent. solution, apparently paralyzed accommodation. Then with the ophthalmometer the astigmatism still seems to increase in the right eye to 1.50 D., and in the left to 1. D."

From this it appears that, in Dr. Johnson's case at least, the change in the curve of the cornea is brought about mainly by the external muscles of the eye, as the influence of the lids and ciliary muscle was eliminated. Again, in my case, the external muscles must have caused the slight change which took place in the cornea, as when his eye was under the influence of a mydriatic the change could still be observed.

Woinow* reported a series of eleven cases of accommodation in the lensless eye in 1873. The patients ranged in age from 12 to 60 years. The fault in the tests of Woinow's cases consisted in the fact that he took the relative range of accommodation for the near point only. This relative range was comparatively small, amounting in no case to more than six inches (see *loc. cit.*, p. 116), and averaged on the whole about $\frac{1}{8}$. He failed also to make adequate objective tests, and in closing his paper acknowledges he can give no positive answer as to the cause of accommodation in aphakial eyes, but believes it was due to three factors: 1. To the anterior surface of the vitreous becoming convex after the lens is removed, and in that way acting as a plus lens. 2. To the action of the ciliary muscle and a change in the depth of fundus from that action. 3. Action on the globe of the eye of the external muscles. He thought, also, that a change in the curvature of cornea might be a factor, but finally eliminated that.

* *Arch. f. Ophthal.*, Berlin, 1873, Bd. xix., p. 107 et seq.

As to his first factor, that the anterior surface of the vitreous became more convex after the lens was removed (which he discovered in two cases by a weak image reflected from it in the upright position), and in that way acted as a plus lens to converge rays of light, I think he is mistaken. This simply from the fact that the index of refraction of the cornea, aqueous and vitreous, is the same for each, and, consequently, as pointed out by Donders,* "we have in the aphakial eye only one refracting surface to take into account, namely, the anterior surface of the cornea." As to his second factor, I believe the ciliary muscle has but little effect on the depth of the eye. I am brought to this conclusion because, when the ciliary muscle was paralyzed in the two cases that are reported by me, the accommodation remained exactly the same in one as before the mydriate was used, and was reduced but about two inches in the other. Furthermore, he states in his own paper that a quota of accommodation remains in such eyes after they have been atropinized, *e. g.*, where it was $\frac{1}{8}$ before using atropine, after using it the accommodation was $\frac{1}{10}$. As to the third factor, I believe the action of the external muscles do have some slight effect in changing the length of the eye in aphakia, but very little, if we can judge from my first case. In the normal eye they may have more effect, as shown in Dr. Johnson's case.

Loring reported a remarkable case of accommodation in the lensless eye to the New York Ophthalmological Society, April, 1879, and the same case to the American Ophthalmological Society in 1870. He later reported the same case at length for Flint's *Physiology of Man*, p. 110 *et seq.* Roosa quotes the case in full in his text-book, *A Clinical Manual of Diseases of the Eye*, p. 57.

Loring's case occurred in the person of a young woman, 18 years of age, who had had both lenses removed by discission five years previous to his seeing her. "The pupils were round, free from membrane and active. With $+\frac{1}{32}$, the patient read with either eye fluently Snellen XXX. and was able, with both eyes, to pick out most of the letters of XX. at

* Donders, *Accom. and Refrac. of the Eye*, p. 310.

twenty feet. She could read No. X. at ten feet, and No. V. at five feet. With the same glass, and with no change of position on the nose, she read No. 1½ Snellen fluently, holding the book naturally at twelve inches, which was about the distance at which she usually read. The book was then gradually withdrawn, the patient reading aloud while this was done. It was found that twenty-one and a half inches was the greatest distance at which No. 1½ Snellen could be read. She read No. 1 Jaeger at twenty inches. The book was then advanced inch by inch, the patient reading aloud, till the book was within five inches of the eye. Inside of this reading was impossible. These experiments were tried over and over again by myself, and were finally repeated in the presence of a brother oculist. This would give the patient an adaptability of the eye for different distances from twenty feet (or parallel rays) to five inches; or, in other words, an accommodation of $\frac{1}{4}$ ($A = \frac{1}{4}$), and a relative accommodation for the very finest print from twenty inches to five ($A = \frac{1}{84}$)."

Loring also cites the papers of Förster, and Woinow, already quoted in this paper; also a paper by Arlt* in which is reported the case of a young man who had after cataract extraction a marked amount of accommodation left. "With convex $\frac{1}{32}$, could read both at six and at twenty-four inches, and could recognize the hands of a steeple-clock, at a distance of more than five hundred paces, with the same glasses: but, as neither the size of the print nor that of the clock is given, no accurate calculations can be drawn from the case." Commenting on his own case Loring says: "The case observed by me would then appear to be the first—as it is certainly the most remarkable—subjected to the recognized standard test of vision."

Unfortunately even with the report of so remarkable a case, Loring, like all before him, failed to make adequate objective tests, and so left the question of accommodation in the lensless eye unsettled. His patient promised to return to have these further tests made, but failed to do so. Loring's remark (through no fault of his own, however,) on Woinow's and Förster's failure to make the proper objective tests applies with

* *Die Krankheiten des Auges*, Prag., 1858, bd. ii., S. 348.

equal force to himself, *e.g.*, "It is to be regretted, and it certainly appears a little strange, that in neither Förster's nor Woinow's cases, was either the optometer or ophthalmoscope used in the elucidation of this problem." Withal, however, he was of the opinion, "that occasionally a considerable, if not a large degree of accommodation may exist, even in the lensless eye."

Dr. Paul Silex's* paper "On the Question of Accommodation in the Aphakial Eye," in 1889, is the latest contribution on this subject with which I am acquainted. Some cases observed in the Berlin eye clinic induced him to make a careful examination into the subject.

The most marked case occurred in a boy, aged 14, who had had a cataract removed five years previously by repeated dissections. This patient complied with both of Donder's requirements, that is, his acuteness of vision was the same in a given interval, *e.g.*, distant vision was $\frac{1}{12} = \frac{1}{12}$, and his near vision was $\frac{1}{12} = \frac{1}{12}$. And as to the light point test Silex observes that it was just the reverse in this case. When he had glasses of slight value added to his distance glass the patient gave contradictory answers, but efforts at accommodation on the intersection of two fine threads near at hand, and in the line of vision of the observed eye for the distant point of light, changed the light into a vertical oval. Silex did not depend on these two requirements, but made objective tests with the ophthalmometer. I must confess, however, that I do not understand his method of testing with that instrument. He says: "The patient left his glasses on, as without them his fixation would have been unsteady. He had to look alternately at the tube of the instrument and at small printed pieces of paper held at reading distance from his eye a little down and in. In spite of the eighteen reflected images of the lamps, it was easy to distinguish those belonging to the cornea. The pupil contracted on convergence, the boy alleged to recognize the letters clearly, but the relative position of the images did not change."

First, I do not understand how the cornea was measured when the patient "kept his spectacles on." I have never seen it

* Knapp's *Arch. Ophthal.*, vol. xviii., p. 274: translated by H. Knapp.

done, but perhaps I am unfortunate in that respect. It seems to me, too, that eighteen reflected images would be a little confusing, and make it anything but easy to distinguish those belonging to the cornea. Second, he says, "the relative position of the images did not change," and this, though the patient first looked at the tube then a little down and in at printed pieces of paper. This is wholly contrary to my experience with the use of the instrument. My experience has been that the least change in the direction of the eye changes the relative position of the corneal images. In fact, one of the chief precautions laid down as a guide in the use of the instrument, is that the observed eye shall look *steadily* at the centre of the tube; the least change from this, as a rule, causes a change in the relative position of the corneal images. By a change of direction of the eye of five degrees from the centre of the tube, I have a change of as much as one diopter in the amount of astigmatism; and for ten degrees, as much as two diopters. How far the doctor means by "a little down and in," I do not know, but, if as much as ten degrees, he certainly measured different points on the cornea, and his test would not hold. His conclusions from his tests were, "that the aphakial eye was devoid of accommodation," and the ability to read at near point in these cases was due in the main, "to the unusual faculty of certain ametropes to overcome dispersion circles."

My own conclusion, from studying the history of the subject, and from the careful and complete tests made in the two cases here reported, is, *That the accommodation present in the lensless eye is due chiefly if not solely to the ability of the patient in such cases, to interpret dispersion circles.* The slight change in curvature of the cornea, and its slight advancement observed in some cases, may, in those cases, account for some of the accommodative power present, but it is such a small factor that it may be eliminated entirely, especially since in some of the most marked cases of accommodation in aphakial eyes no such changes have been observed. How the change in the curvature of the cornea and its advancement are brought about, have been discussed in this paper already.

Although, as Loring says, "It would seem impossible that

the ability to read the finest print at five inches (which was done in his case), even taking into consideration the magnifying power of the glass, could be due to the overcoming of the circles of dispersion," yet I believe such to be the case, and for the following reasons: First, to the great increase in size of the retinal images by the removal of the crystalline lens and replacing it with a lens in front of the eye. By this procedure the united nodal point is moved forward, and this, with the magnifying power of the glass in front of the eye, greatly increases in size the retinal images. Donders* has shown by calculation, that a convex lens of three inch focus, placed one half inch (usual distance) in front of the eye increases the retinal images in size one and one third times. By this one factor alone, then, the images of Jaeger No. 1. would be increased in size until they equalled (for the unoperated eye) Jaeger No. 2, or a little larger. Second, to the narrowing of the pupil. Where no iridectomy is done, this is due to contraction of the iris as the result of convergence and an effort at accommodation; where an iridectomy is done to a partial filling up of the pupil by membrane, except a central opening. It is a well known fact that if the pupil is narrowed from any cause such narrowing acts as a diaphragm to cut off the peripheral rays of light entering the eye, and serves in this way to lessen the dispersion circles. Third, to the extraordinary acuteness of vision present sometimes after cataract extractions, *c. g.*, as happened in my case, where it was $\frac{4}{10}$, double the ordinary acuteness of vision. I believe this fact contributed largely to the power of interpretation present in this case; for he had an iridectomy and a clear pupil. Fourth, in some cases, to the patient not looking directly through the centre of the glass, but slightly outside of the centre, either by tilting the glasses, tilting his head, or not holding the reading matter directly in front of him. In my opinion, this fourth factor—in effect, a slight tilting of the strong plus glasses—assists the individual in interpreting dispersion circles chiefly by neutralizing the monochromatic aberration present in such cases. This is a point which no writer has hitherto called

* *Accommodation and Refraction of the Eye*, p. 318.

attention to in discussing this subject. Wm. Harkness* has shown that, "with a pupil four millimetres in diameter, the normal cornea produces monochromatic aberration to the extent of $\frac{1}{3}$: and as there is no confusion of images in the normal eye, it seems probable that the crystalline lens exerts some compensating action. This suspicion is strengthened by the well-known fact that in aphakia, the acuteness of vision is nearly always improved by giving a certain inclination to the powerful convex glasses which are then necessary." Furthermore, this very fact of monochromatic aberration in the lensless eye, to my mind, renders Donders' light-point test more or less unreliable.

In conclusion, I might say that I believe this question of accommodation in the lensless eye would have been settled long ago had the proper objective tests been made. From one cause or another, not a single observer made all the tests necessary to settle the question, except for himself, and some did not succeed even in doing that. In fact, all of them together failed to make the requisite number of tests. Dr. Sillex came nearer to it than any who had gone before, but he failed in one most essential feature, and that was to atropinize his subjects. Besides his one objective test was open to serious objections in its *technique*. Most of the observers were content to rest the case on mere assumptions and subjective tests. Even that most careful of observers, Donders, fell into this error ; so that, the quotation he once applied to Wharton Jones and Wilde, in regard to their assertion, "that the radius of curvature of the cornea was shorter in the vertical meridian than in the horizontal," before they had proved it (even questioning if they should receive credit for their observation), can be equally as well applied to himself, and others along with him who had the same opinion in regard to accommodation in the lensless eye. The quotation† was, "We see that in science also the quotation is sometimes applicable, that '*audaces fortuna juvat*.' "

They were right, I believe, in their assumption, but, failing to bring *sufficient* evidence to prove it, still left the question of accommodation in the lensless eye and its cause *sub judice*.

* Knapp's *Arch. Ophthalm.*, vol. xii., p. 18.

† Donders, *Accommodation and Refraction of the Eye*, p. 543.

AN ANALYSIS AND NOTES OF 824 EAR CASES IN THE YEAR 1894.

JAMES E. H. NICHOLS, M.D.

SUCH a paper as the following must necessarily be somewhat incomplete because of the impossibility in a city like New York of following up closely the large number of "floaters," who make the rounds of aural clinics, giving no clinician sufficient time to complete the case, and also on account of the many cases which make no visit subsequent to the first, either because they do not need to or because their work prevents them from doing so.

During the year our efforts have been directed in several special directions. An attempt has been made to add some knowledge to the complicated question of the relation of bone and aerial conduction in the various forms of aural disease, and the large majority of the cases seen have been tested by the series of tuning-forks, regardless of the form of the affection. No statement of the results obtained will be given in this report, because it was determined to re-test as large a number of cases as can be reached, after an interval of treatment, in the hope of educing some definite conclusion of the value of these tests from a prognostic point of view. This portion of our work will therefore be postponed to a later report.

In another direction we have striven to make some advance in discovering the causes of subjective noises and the best means of relieving this distressing symptom.

Recognizing also the insidious onset of catarrhal deafness both in young and old it has been our aim to elucidate the connection between diseases of the upper air-passages and those of the ear, and by preventive measures in such cases as came in our hands, both in our ear and throat clinics, try to head off acute and chronic catarrhal conditions of the middle ear, the eustachian tubes, and the tympanic membrane.

In the treatment of acute and chronic suppuration, one method has been almost uniformly pursued, *i.e.*, the true "dry" method, and the results have been most satisfactory, and will be spoken of in detail under the proper head.

OTITIS EXTERNA ACUTA.

Cases.....	35
Cured.....	30-86 %
Not reported.....	6

Both the diffuse and circumscribed forms are included, and the treatment adopted has been the same in both varieties.

It has been to first render the canal aseptic by means of hydrogen peroxide, hot douching and mopping, and then to pack the canal with a graduated tampon of cotton-wool thoroughly saturated with the boro-glyceride of the U.S.P., the tampon was renewed daily, the canal being cleaned at the time of renewal.

The uniform relief experienced by the patient, and the early resorption of the inflammatory products, without recurrence, recommend this treatment most highly. It is fair to suppose that the six unreported cases found relief also.

In five cases only was incision noted with evacuation of pus ; in them the same treatment was pursued. The average time of cure was four days—*i. e.*, the swelling subsided and pain had disappeared. One case developed into an *otitis media suppurativa acuta*, showing that an intact membrana tympani is not proof against an infection originating externally. Recovery followed. In two cases the simple hot douche sufficed to bring about resolution, and in several (5) cases the aqueous solution of cocaine and resorcin, referred to under the head of acute attic inflammation, was used in conjunction with the boro-glyceride, but without increasing the action of the latter as far as could be observed.

MYRINGITIS ACUTA.

Cases.....	12
Cured.....	7
Not reported.....	5

In two cases the origin was traumatic, and in one of these the M. T. had been scratched by a wooden toothpick. This case developed into *otitis media suppurativa acuta*, and this, in turn, in spite of careful treatment, became an acute mastoiditis. Recovery followed without operation. This case is complementary to the one cited under the preceding head where acute middle-ear suppuration was produced by external inflammation.

In the treatment of these cases an aqueous solution, 4 per cent. cocaine and 8 per cent. resorcin, was used exclusively, ten drops being instilled in the external canal every hour or two, without warming, the heat decomposing the resorcin and rendering it inactive. The duration of the cases averaged about one week.

OTITIS MEDIA ACUTA CATARRHALIS (SHRAPNELL).

Cases.....	18
Cured.....	12
Not reported.....	6
Nasal conditions noted as diseased.....	7

These cases were noted as having the area of inflammation observed only in Shrapnell's membrane, the remainder of the M. T. being unaffected. Nine of the twelve cases were cured by means of the cocaine and resorcin solution above referred to without other local treatment, one case was treated satisfactorily with 10 per cent. carbolic acid in glycerine, and two cases yielded to gentle inflation. One case became suppurative, and no final note was made.

Tinnitus, not previously present, was observed in nine cases.

OTITIS MEDIA ACUTA CATARRHALIS.

Cases.....	64
Cured.....	41
Improved.....	3
Not improved.....	2
Not reported.....	18

Diseased nasal conditions, 17, divided as follows :

Deviation or malformation of septum.....	10
Chronic hypertrophic rhinitis.....	5
" atrophic rhinitis.....	3
Acute catarrhal ".....	4
Chronic catarrhal pharyngitis.....	6

Of the cured cases the result was obtained in 22 by the cocaine and resorcin solution, in 5 by the hot douche alone, in 9 by moderate politzerization, in 1 by carbolic glycerin, in 2 by hydrogen peroxide, in 1 by removal of cerumen, and in 1 by combined methods.

One case proved to be due to syphilis, and two cases went on to the chronic form. One of these, of probable malarial origin, was aggravated by the use of quinine, and refused to yield all treatment.

In three of the cured cases the cure was undoubtedly hastened by the removal of adenoids in the pharyngeal vault, no ill effects having been observed from this procedure.

The average duration of the disease was eight days.

ACUTE MASTOIDITIS.

Cases.....	10
Cured.....	6
Not reported.....	4

The details of these cases are reserved for a later report, except to say that the ordinary operation was done in 3 cases, Wilde's incision sufficed in 2 cases, and heat in 1 case.

OTITIS MEDIA ACUTA SUPPURATIVA.

Cases.....	42
Cured.....	37
No improvement.....	9
Not reported.....	6

Of the 9 cases noted as "not improved," 2 became chronic, 3 developed mastoid complications, 1 was tubercular and developed a general tubercular cervical adenitis, and 1 was syphilitic.

As to the diseased nasal conditions, 24 cases, or 50 per cent., suffered from various forms of obstruction or atrophic rhinitis or pharyngitis.

Acute catarrhal rhinitis.....	5
Chronic " " hypert.....	4
" atrophic ".....	1
" hypertrophic tonsillitis.....	5
Acute catarrhal tonsillitis.....	2
Adenoids.....	3
Acute catarrhal pharyngitis.....	4

In regard to the treatment adopted the same method was used in the majority of cases as in the chronic cases, and it will be spoken of under the head of *otitis media chronica suppurativa*.

One case which presented both hypertrophied tonsils and adenoids was operated on under general anæsthesia, and the passages were thoroughly cleaned out. Absolutely no other treatment was adopted, not even syringing with warm water; the canal was simply mopped out with dry cotton. Complete recovery followed and the hearing returned to normal.

The shortest period of treatment noted was two days and the longest two months.

OTITIS MEDIA CHRONICA SUPPURATIVA.

Cases.....	191	
Cured { for discharge.....	62	32.5%
{ for hearing.....	23	12. %
Improved { for discharge.....	43	22. +%
{ for hearing.....	32	17. %
Not reported { for discharge.....	79	
{ for hearing.....	136	

The large proportion of the "not reported" is due to the fact that many of them are still under observation, while many others are "floaters" from one clinic to another and could not be retained long enough to complete the treatment.

Diseased nasal conditions.....	69	32. %
Chronic atrophic rhinitis.....	13	
" hypertrophic rhinitis.....	37	
Deviation of septum.....	16	
Purulent rhinitis.....	2	
Ozæna.....	1	
Diseased conditions of naso-pharynx and pharynx.....	68	33. %
Chronic hypertrophic tonsillitis.....	9	
Chronic catarrhal naso-pharyngitis and pharyngitis.....	32	
Adenoids.....	19	

All these cases, as well as those of the acute suppurative variety, have been treated by what is the true "dry" method, *i. e.*, the parts are cleansed and then kept clean and dry by re-

moving the secretion as soon as formed, and not by filling the cavity with a powder, like boracic acid, in the hope of absorbing the discharge. The best surgery requires thorough drainage and removal of infectious products, not damming them up out of sight for a time. The insufflation of powders in quantity in the external auditory canal does the latter, and is accordingly not to be practised. The pharmacists of the Hospital, Messrs. Van Horn and Ellison, put up for me what is called an "Ear-Kit," in a suitable box. The box contains an "Ideal" soft rubber ear syringe, a two-ounce bottle of hydrogen peroxide, a dropper, a package of cotton, and some wooden toothpicks. It retails at 50 cents to the patients, each of whom is provided with one for home use.

If a child, some responsible member of the family is given charge of the case and great stress is laid on regularity and persistence of treatment.

Printed directions are placed on the box, as follows :

DIRECTIONS FOR USE.

"EAR-KIT."

DR. J. E. H. NICHOLS,

Manhattan Eye and Ear Hospital.

- 1.—Syringe out the ear with warm water six times.
- 2.—Drop a dropper full of the drops into the ear with the head on one side ; allow them to remain in the ear five minutes.
- 3.—Syringe the ear again.
- 4.—More drops.
- 5.—Syringe the ear the third time.
- 6.—Dry thoroughly with cotton.
- 7.—Do this twice a day.

Gebrauchs-Anweisung.

"Ohren=Kit,"

DR. J. E. H. NICHOLS,

Manhattan Augen und Ohren Hospital.

- 1.—Spritze das Ohr mit warmen Wasser sechs mal.
- 2.—Lege den Kopf auf die Seite und fülle das Ohr mit einen Tröpfer voll Tropfen und lasse dieselben fünf minuten darin.
- 3.—Spritze das Ohr nochmals.
- 4.—Mehr Tropfen.
- 5.—Spritze das Ohr zum dritten mal.
- 6.—Trockne das Ohr mit Watte.
- 7.—Thue dies zwei mal des Tags.

In using the cotton a *small* mop is made on the pick and the ear wiped out repeatedly, until the cotton comes out dry. If necessary, the drying process is repeated several times daily, the principle being to remove the moisture as soon as formed, not only from the external canal but from the tympanic cavity as well.

Such complications as granulation masses, minute perforations, carious bone, cholesteatomatous masses, etc., must, of course, be attended to by the surgeon himself in the proper way, a discussion of which is not possible here.

Such uniformly good results have been obtained in routine treatment by the means described, that they can be confidently recommended for general adoption.

An illustration of the close relation existing between affections of the ear and of the naso-pharynx is found in the case of B. C., in whom were present a bilateral tonsillar hypertrophy and a considerable adenoid mass in the pharyngeal vault. Child was a mouth breather, and had had an offensive otorrhœa for several years, which had not yielded to the ordinary means of treatment. Ablation of the tonsils and removal of the adenoid mass were practised under ether, without instituting or carrying on any local aural treatment whatever. Immediate improvement began as regards discharge and hearing, and in a month the former had entirely ceased, the perforation had healed and the child was hearing approximately normally. This is one of several cases of the same nature, which will be reported in detail at another time.

Of the various "drops" ordered for use in connection with the "dry" treatment the preference must be given to a 5% solution of alumnol in alcohol. One effect of this preparation is not only to lessen the amount of the purulent discharge, but also to convert it into a mucoid character, which does not become fetid on being left in the cavity. The effect is partly due to the alcohol, but only partly, as alcoholic solutions of iodoform, dermatol, eucrophen, and other drugs, do not act as efficiently, and when the alcohol has evaporated leave behind an insoluble residue.

For the repression of granulations in small masses, aside

from the curette and snare, the two best preparations have been found to be, (1) a solution of equal parts of iodine and carbolic acid and (2) ortho-chlor-phenol applied in minute quantity directly to the granulations and immediately wiped dry. The latter drug is very new in practice, but seems destined to be most useful. Its formula is C_6H_4ClO . It is a volatile liquid, miscible with glycerine in any proportion, acts as a rapid but not deep escharotic, and possesses, in a marked degree, the power of the other phenols of deodorizing fetid accumulations. It is also anæsthetic and may be used in that manner before curetting. Too profuse an amount should not be used, or the effect is liable to be nullified.

OTITIS MEDIA CATARRHALIS CHRONICA.

Of this most common affection there were 218 cases observed divided as follows :

(a) O. M. C. C. <i>Hypertrophica</i> , 198.			
Cured.....	20	10%	
Improved	65	33%	
Not improved.....	10	5%	
Not reported.....	103	52%	

(b) O. M. C. C. <i>Atrophica</i> , 9.			
Cured.....	1		
Improved	6		
Not reported.....	2		

(c) O. M. C. C. <i>Adhesiva</i> , 11.			
Cured.....	0		
Improved.....	3		
Not improved.....	1		
Not reported.....	7		

Of the nasal conditions noted we find in 198 cases :

(a) Chronic hypertrophic rhinitis, deviated septum, polypi, etc.....			
	77	39%	
Chronic atrophic rhinitis.....	33	16½%	
Chronic pharyngitis.....	48	25%	
Chronic hypertrophic amygdalitis.....	22	11%	
Adenoids.....	19	10%	
(b) 9 cases, chronic hyp. rhinitis, etc.....			
	3	33%	
Chronic atrophic rhinitis.....	6	66%	
Chronic atrophic pharyngitis.....	2	22%	
Chronic hypertrophic amygdalitis.....	2	22%	
Adenoids.....	2	22%	

(c) 11 cases.

Chronic hypertrophic rhinitis, deviation of septum, exostosis.....	5	45%
Chronic atrophic rhinitis.....	3	25%
Chronic atrophic pharyngitis.....	3	25%
Chronic hypertrophic amygdalitis.....	1	10%

Combining the three classes we find in 218 cases :

Chronic hypertrophic rhinitis, deviation of septum, exostosis, etc.....	85	39%
Chronic atrophic rhinitis.....	42	20%
Chronic pharyngitis, catarrhal and atrophic..	53	24%
Chronic hypertrophic amygdalitis.....	25	11%
Adenoids.....	21	10%

In the treatment of these cases the greatest reliance has been placed on politizerization, catheterization, and the use of the Delstanche and Siegle instruments, for the purpose of mobilizing the ossicles and inflating the middle ear.

It must be remarked that recourse has not been had in a single instance to removal of any or all of the ossicles, our intention being to carry on a year's work without operative interference of that kind. The success of such operated cases, in our own experience, and our observations of them in this Hospital, has led us to look with some disfavor on the operation, or, at least, to believe it to be limited to a very small and not yet carefully defined class. This opinion is somewhat strengthened by the appearance of two cases operated on at other hospitals, in which only an aggravation of symptoms had followed.

The vibrophone was tried in a small series of cases without satisfactory result. Treatment was given three times weekly for ten minutes. Only one case showed improvement of more than temporary character (a few hours), and this case finally fell back to her original condition.

There is ground for the opinion that operations for the removal of nasal stenosis give great relief to the symptoms of tinnitus, but this line of investigation is still in progress, and will be reported another year. One noticeable case of absolute restoration to normal hearing by the removal of adenoid growths and hypertrophied tonsils will justify reporting :

T. B——, aged 17, office boy. Gradually decreasing hearing for several months. For last two weeks slight pain in both ears. Both M. T. retracted and slightly congested (sub-acute catarrhal). Mouth breather. Adenoids and chronic hypertrophic amygdalitis, both R. and L.

November 22, 1894.—

	R.	L.
Watch.....	$\frac{3}{80}$	$\frac{3}{80}$
Voice	20 in.	3 ft.
Acoumeter.....	2 ft.	2 ft.

Operation for adenoids and tonsils November 25th, under ether.

January 18, 1895.—

	R.	L.
Watch.....	$\frac{1}{10}$	$\frac{1}{10}$
Voice	20 ft. +	20 ft. +
Acoumeter.....	20 ft. +	20 ft. +

No treatment whatever to the ear directly. M. T. became normal in plane and color, and all pain and discomfort disappeared.

In regard to the cases with atrophic membrane, great satisfaction has been found in the use of Mandl's solution (R. Iodi, grs. ii.; Pot. Iodidi, grs. xii.; Glycerini, $\frac{3}{4}$ i), applied with frequency to the naso-pharynx, and accompanied by the use of a 10 per cent. ichthyol ointment (Unguentum nasalis) twice daily, used by the patient. The tonic effect to the pharyngeal and tubal muscles leads to the closing of the overpatulous tubes, thus preventing the over-distension of the middle ear.

It is noticeable that all the cases reported as cured (of O. M. C. C.) had undergone treatment for the nasal or pharyngeal disease present, while only a degree of improvement was found in those which had not been subjected to such treatment.

Accidents of treatment were noted in several cases. Twice an acute suppuration followed operation for the removal of nasal obstruction. Neither became chronic. Once a considerable traumatic hemorrhage in the M. T. followed the too vigorous use of Siegle. Once a localized emphysema followed the unskilful use of the catheter. Once (interesting only in a

dental sense), in operating for removal of adenoids, an incisor tooth of the lower jaw was inadvertently broken out. Wrapped immediately in a hot, moist towel and replaced in its socket after the operation, it became perfectly solid.

OTITIS INTERNA.

Cases.....	35
Cured.....	3
Improved.....	7
Not improved.....	4
Not reported.....	21

In regard to the causation—3 were directly traceable to syphilis and 2 to cinchonism ; the remainder showed no definite origin.

Twelve gave evidence of nasal or pharyngeal disease, while 17 complained of excessive tinnitus.

In regard to the treatment, always unsatisfactory, the best results were obtained from gradually increasing doses of potassium iodide, sometimes combined with strychnia, and from pilocarpin. General hygiene was also looked after. Electricity gave no result, beyond the regular reactions, in the cases in which it was tried.

One case is noted of hemorrhage into the labyrinth, which made a perfect recovery. Mrs. A., 61 years, washerwoman. Four days previous to visit heard a sudden noise in R. E., like loud escaping steam, which persisted. No pain, but almost total loss of hearing, accompanied with vertigo and a "tight feeling" about the head. M. T. shows no change beyond a slight senile retraction. No previous history of any ear disease. No syphilis. Diagnosis was made of hemorrhage into the labyrinth, and the patient was put on pot. iod. in increasing doses. She was also politized.

Tests.

October 4th, first visit : Watch, c.c. ; Loud Voice, 3 ft.

T. F. R.	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{0}{0}$
Oct. 13th.	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{0}{0}$
Nov. 2d.	$\frac{0}{0}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{0}{0}$	$\frac{1}{2}$
Feb. 16th.	$\frac{3}{4}$	$\frac{1}{8}$	$\frac{0}{0}$	$\frac{0}{0}$	$\frac{1}{1}$

Watch, $\frac{0}{0}$. Acoumeter and voice (Bezold), 20 ft. +. Noise entirely gone. No vertigo. Hearing normal.

" MIXED " OTITIS MEDIA AND INTERNA.

Cases		64
Cured.....	2	3 %
Improved.....	20	31 %
Not improved.....	11	16 %
Not reported.....	31	50 %

The large percentage of "not reported" is undoubtedly due to the slow progress of improvement, if any, and the consequent lack of perseverance on the part of the patient.

Of the diseased conditions in the upper air passages we note :

Chronic hypertrophic rhinitis.....	17	26 %
" atrophic ".....	12	20 %
" pharyngitis.....	14	22 %
" and tonsillitis.....	3	5 %

The treatment adopted was appropriate to the mixed condition. Four of the cases gave history of specific lesions.

TINNITUS AURIUM.

THOMAS J. HARRIS, M.D.

IN 824 cases—diseases of all kinds—there are 321 cases of tinnitus reported. Of these, the associated aural affection is as follows :

Impacted cerumen.....	51
O. M. C. C.....	97
O. M. C. C. adhesiva.....	15
O. M. S. C.....	30
O. interna.....	26
Mixed disease.....	44
Foreign body.....	1
Otitis externa.....	5
Eustachian catarrh.....	2
Otitis M. acuta.....	50

321

Of these, 184 did not enter on any special course of treatment for tinnitus. Of the remainder—137—there were :

Cured.....	58
Improved.....	46
Not improved.....	33

137

The following table will show this more intimately as regards the nature of the disease.

	Cured.	Improved.	Not Improved.	Per Cent. of Cured and Improved.
Impacted cerumen.....	10	1	3	77 %
O. M. C. C.	12	18	9	78 — %
O. M. C. C. adhesiva.....		2	1	66 — %
O. M. S. C.....	1	7	1	77 %
O. interna.....	3	4	5	56 %
O. M. acuta.....	27	4	2	93 %
Mixed disease.....	3	10	12	52 %
Foreign body.	1			100
Eustachian catarrh.....	1			100 —

As far as observation of the character of the tinnitus in the different cases is concerned, no attempt is made at a classification according to the nature of sound, but it is interesting to note that in 11 of the 13 cases of *O. interna* where this feature was observed, the tinnitus was likened to the steam escaping from a tea-kettle.

In 10 out of 17 cases of impacted cerumen it was of a buzzing nature.

In 7 out of 9 cases of otitis *M. acuta* it was pulsating. As regards cases of *O. M. C. C.* there was no uniformity.

Treatment.—The following is a synopsis of the different drugs and modes of treatment pursued :

Inflation (atheter and Politzer's method) ; inflation of menthol vapor. Internally, iodide of potash, strychnine, nitroglycerine, tr. gelsemium, ergot, tr. digitalis, and hydrobromic acid, electricity and local treatment to the ear through the auditory canal.

Inflation was practised in 51 cases, with relief in 30 cases, or 60 %. Of these, 34 were cases of *O. M. C. C.*, of which 16 were cured, or 48 % ; 10 — *O. acuta*, with 80 % cured = 11 ; mixed disease, with 54 % relieved, and 1 case of *O. M. C. C. adhesiva*, with no relief.

Electricity (Faradic, galvanic current, and vibrophone) was employed in 4 cases of mixed disease.

One unique case of tinnitus deserves mention :

Mrs. B. F., aged 28, under treatment at another institution for thirteen months for extreme degree of tinnitus following the administration of quinine in large doses. Slight impairment of hearing with no noticeable change in condition of *M. T.* No response to drugs or local treatment after four months. The following treatment was then tried empirically. A pledget of cotton saturated with 8 % cocaine was placed against the *M. T.* A constant current of 5 m. a. was then passed from the anode in the ear (kathode in hand) for 5 — 10 minutes every other day until slight vertigo was felt. Pain was immaterial. Relief from the extreme bell-ringing was experienced at the first application, and after the sixth the noise ceased. No effect was obtained by this procedure *without* the cocaine. No trouble was experienced by the patient for some months, when her physician, unknown to her, prescribed quinine for a severe cold. After taking one pill of two grains, the tinnitus returned.

in the same degree as before. The former treatment renewed, after four sittings, the tinnitus ceased, and there has been no return (now two months). As throwing some light on the question of the effect of quinine on the vessels of the labyrinth, this case is interesting. Cocaine is a vaso-constrictor, and by cata-phoresis was brought into local play on the vessels of the middle and internal ear, which were undoubtedly dilated from the action of the quinine.

Local treatment relieved tinnitus in all of the 5 cases where it was tried, and in 8 out of the 12 cases of otitis acuta, or in over 64 %.

With drugs our experience was varied :

Iodide of potash was given in 3 cases of chronic internal ear disease with relief in all, and in 2 cases of acute trouble with equal success, while in 8 cases of mixed disease there was relief in only 2, or but 25 %. It should be stated that a number of the successful cases of otitis interna were undoubtedly of specific origin. How many cannot be definitely determined.

Strychnine, gr. $\frac{1}{16}$ t. i. d., before meals. Given in 6 cases of O. M. C. C., relief in 5 = 83 %; one case of otitis interna, relief; one otitis acuta, relief; 3 cases mixed disease, no relief. Total, 11 cases, relief in 8 = 72 %.

Tr. gelsemium. Our study of this drug is still in progress. It is a spinal depressor, and has no decided action on the heart. As yet no class of cases seem especially adapted for its use, yet its effect in some cases has been most happy.

Given in 4 cases of O. M. C. C.....	Relief in 2
“ “ 2 “ “ O. interna	“ “ 0
“ “ 2 “ “ O. macula	“ “ 2
“ “ 1 “ “ mixed diseases.....	“ “ 0
<hr/>	<hr/>
Total, 9	4

From this it is at least possible to infer that its use is apparently limited to diseases of the middle ear.

Menthol, applied in vapor through Eustachian tube.

Given in 12 cases of O. M. C. C.....	Relief in 4
“ “ 3 “ “ mixed disease.....	“ “ 1
<hr/>	<hr/>
Total, 15	5

Use in mixed disease is of course limited to effect on middle ear.

Nitro-glycerine :

2 cases of O. M. C. C.....	Relief in 1
1 " " mixed disease.....	" " 0
—	—
3	1

Ergot :

1 case of O. M. C. C.....	Relief in 0
1 " " O. acuta	" " 1
—	—
2	1

Hydrobromic acid :

1 case of O. internal	Relief in 1
1 " " mixed diseases.....	" " 0

Tr. digitalis :

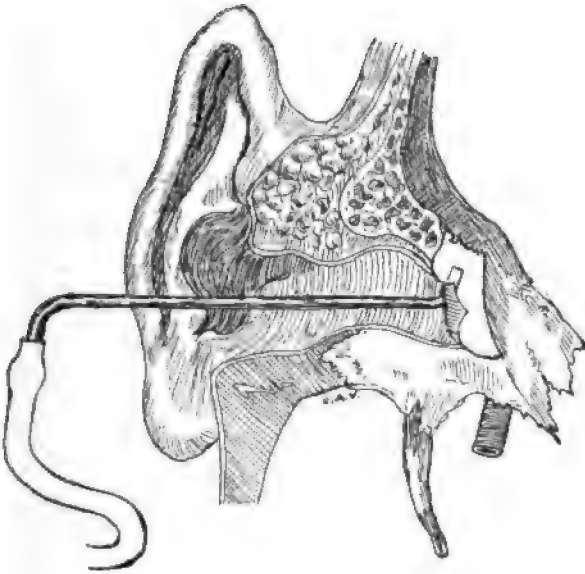
2 cases of O. M. C. C.....	Relief in 1
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Finally, nasal treatment alone was pursued in 8 cases—O. M. C. C., relief in 5 ; and in 1 case of O. M. S. C., relief ; and in 1 mixed case, no relief.

TREATMENT OF SUPPURATION OF THE ATTICUS TYMPANICUS.

BRENTANO CLEMENS, M.D.

ONE of the most important morbid processes located within the ear is unquestionably purulent inflammation of the atticus tympanicus. Its importance and relative degree of seriousness is based upon the following anatomical observations, viz.: The isolation of the attic cavity, its encroachment upon the middle cerebral fossa, the absence of bony separation of the cerebral and attic cavities in the young, its communication



AFTER HARTMANN.

with the mastoid antrum, the difficulty encountered in securing sufficient and efficient drainage, which in part is due to the

unfavorable location of the perforation in the membrana flaccida, and to the swelling of the lining mucous membrane of the cavity, closing the various outlets with which it communicates.

The usual method heretofore adopted in healing cases of chronic suppuration of the atticus tympanicus has been operative, that is, the removal of the membrana tympani, malleus, and incus. When necrosis of one or more of the ossicles can be detected by careful exploration with a delicate ear probe, the use of this method is particularly called for. The object of the following report is to indicate that operative interference is not always necessary, especially where careful probing does not indicate the existence of any necrosis of the ossicles.

CASE I. X., female, single, age 24, seamstress, presented herself for treatment November, 1892.

History.—About one year ago (1891), from an unknown cause, suffered with fleeting pains in the right ear, never very severe. Hot sweet oil dropped in the ear gave almost immediate relief and no further trouble was experienced until two months ago (September, 1892,) when upon inserting a hair-pin in the canal of the ear a considerable-sized lump of hardened pus (?) was removed. There was some discharge after this off and on, but never enough to more than cause a feeling of dampness in the canal. There was no vertigo, no tinnitus, but a feeling of soreness and fulness over right side of head, and an occasional attack of severe frontal headache.

Objective Examination.—This showed a large mucous polypus filling three fourths of the lumen of the canal; very little pus, no fetor. Probing located the possible rise of the polypus from a perforation in the membrana Shrapnelli H. D. R. $\frac{3}{8}$. Weber R. + L. —. B. C. > R. C.

Treatment.—After syringing, the polypus was removed with the wire écraseur under the local anæsthetic action of cocaine muriate ten per cent. The stump of the polypus was now found springing from a perforation about the size of a split pea in the anterior superior part of the membrana Shrapnelli. The membrana tympani was uninvolved. A few applications of chromic acid fused to the point of an ear probe were made to the stump of the polypus, thoroughly destroying it. Every subsequent examination failed to demonstrate the presence of any existing necrosis. The attic cavity was thoroughly syringed three times a week with a warm four per cent. solution of bo-

racic acid so long as any discharge could be detected. The instrument used for this purpose being the one suggested by Dr. Arthur Hartmann, of Berlin, Germany. Inflation and catheterization failed to demonstrate any communication with the tympanic cavity by the characteristic perforation whistle. The Eustachian tube was patulous. An occasional application of nitrate of silver solution 3 ii to $\frac{3}{4}$ ss. was made on a small pledget of cotton bent at right angles to the shank of the cotton holder. Later on in the course of the treatment, acid sulphuricus aromaticus was made use of practically in the same way, with excellent results; indeed, these results were more marked than those accruing from the use of nitrate of silver. Momentary pain varying in degree of severity followed the use of the acid, but I have never seen any decided aggravation resulting from its use.

The case made constant improvement under this form of treatment and was discharged in twelve weeks from the time I first saw it. Up to the present date there has been no return of the trouble.

CASE 2. X., age 12, school boy, presented himself for treatment in September 1893.

History.—The patient has been suffering during the last three months with recurrent attacks of earache in the right ear, lasting a day or two at a time, the pain always being relieved by a copious discharge of pus. During the last two days the discharge has been more or less hæmorrhagic. For twelve hours the earache has been unendurable; considerable vertigo and frontal headache. Mastoid region is free from pain and swelling. Tinnitus marked but intermittent.

Objective examination.—The entire canal is filled with a large mucous polypus, which is surrounded by thick, foul-smelling pus in considerable quantities.

Treatment.—After thoroughly cleansing the ear the polypus was removed with a wire *écraseur*, thereby relieving the earache. The stump of the polypus was found springing from a large perforation in the membrana Shrapnelli. Chromic acid was the agent used to destroy it. The entire posterior half of the membrana Shrapnelli was found destroyed. The membrana tympani was uninvolved. No carious bone was detected, although repeated explorations were made with the ear probe. Surprisingly large quantities of pus and cholesteatomatous masses were washed away with the first use of the attic syringe, which almost immediately relieved the feeling of fulness, headache, and vertigo. The attic cavity was carefully cleansed two or three times weekly with a warm four

per cent, solution of boric acid, the improvement resulting from week to week being most gratifying and steady. Solutions of nitrate of silver and of the aromatic sulphuric acid were applied to the mucous membrane of the attic cavity with benefit. Inflation or the use of the Eustachian catheter never gave a perforation whistle, demonstrating that there was no communication between the attic and tympanic cavities.

H. D. R. $\frac{3}{8}$. Weber R. + L.—B. C. > A. C. Patient was under treatment about four months and was discharged cured. Up to the present time there has been no recurrence of the disease.

CASE 3. J. R., age 50, male, single, laborer.

History.—Has had discharge and pain for the last six weeks in the right ear. Has been subject to such attacks for some years. Occasionally has some tinnitus.

Objective examination.—Showed an old oval cicatrix directly above the short process of the malleus. Posterior to it and separated by a sharp band of fibrous tissue was a perforation in the membrana Shrapnelli about the size of a split pea, and a very careful exploration with the ear probe failed to show the existence of necrosis; slight discharge; no fetor.

H. D. R. $\frac{3}{8}$ Weber, R. + L.—B. C. > A. C.

Treatment.—Quite the same course of treatment was followed out as in the preceding cases. The boracic acid solution four per cent. was used in syringing out the attic cavity two or three times a week, depending upon the amount of pus present. A solution of nitrate of silver of the strength of 23 to half a fluid ounce was the only application made. The patient is still under treatment and progressing remarkably well, there being absolutely no discharge or discomfort of any kind.

CASE 4. J. C., age 26, male, laborer.

History.—Ten years ago had had trouble with both ears, the exact nature of which he could not describe. About two years ago the left ear became painful, followed by a slight discharge, which has been annoying him ever since. Tinnitus constant in both ears, no pain at present.

H. D. R. $\frac{3}{8}$ Weber L. + R.—B. C. > A. C.

Objective examination.—A medium sized perforation was found in the membrana Shrapnelli superior and anterior to the short process. There was some granulation tissue within the perforation. The membrana tympani was cloudy and somewhat refracted, otherwise uninvolved. The attic cavity was thoroughly explored, but no necrotic condition was found to exist.

Treatment.—The attic cavity was syringed with a four per cent. solution of boracic acid and repeated twice a week, considerable débris having been removed with the first use of the syringe. An examination now showed that a small mucus polypus had been washed into full view. This was deeply cauterized with chromic acid, only two applications being required to thoroughly destroy it. The use of the Eustachian catheter showed the tube to be patulous, but gave no perforation whistle. Solutions of nitrate of silver and aromatic sulphuric acid were the only remedies used, and occasional applications from time to time were made with benefit. The discharge had entirely ceased in November, 1894, and the case was satisfactorily progressing toward a perfect result when, without any reason, the patient ceased attending the clinic.

These cases of chronic suppuration of the atticus tympanicus, where necrotic conditions do not definitely appear, have been successfully treated mainly by reason of a thorough removal of the inflammatory products confined within the limits of this cavity. The method to be employed to accomplish this object is purely a matter for the operator to decide. My own preference, however, leans toward the method in general use in the clinic of Dr. Arthur Hartmann, of Berlin. I have found that his attic syringe was most efficacious, simplest in application and manipulation and that its use was attended with least discomfort to the patient. As a complete description of this instrument and the directions regulating its use are to be found in his treatise on diseases of the ear, I shall only emphasize three cautionary points that must be observed whenever his method is utilized.

A.—ESPECIAL CARE IN INTRODUCING THE CANULE WITHIN THE PERFORATION AND ALWAYS UNDER REFLECTED LIGHT.

The relative degree of sensitiveness of the membrana tympani and its surrounding parts in such cases varies greatly from absolute intolerance to an utter lack of sensation. A preliminary exploration with the ear probe will always show more or less the degree of tolerance or intolerance. An instillation of a 10 per cent. solution of cocaine will enable the operator to use the canule in an extremely sensitive ear.

B.—LOCATION OF THE CANULE WITHIN THE PERFORATION.

The point of the orifice of the canule should never be directed upwards, so that the stream of water strikes the roof of the attic, but it should be placed more laterally either to the right or to the left, as the case may be. In this way the current of water not only traverses the entire cavity, ensuring the absolute cleansing thereof, but reduces the liability to a severe attack of vertigo.

C.—GENTLE PROPULSION OF THE STREAM OF WATER THROUGH THE SYRINGE INTO THE ATTIC CHAMBER.

The greatest degree of care and gentleness should be observed in regulating the force of the flow of water into the attic cavity. Vertiginous attacks of greater or less degree are common, but their intensity can be reduced to a minimum by exerting a gentle pressure on the bulb or piston of the syringe. It is always safe to caution the patient to give notice to cease syringing the moment the vertigo becomes at all marked. Patients have been known to reel and fall from the chair through an utter disregard of these cautionary measures.

HYPERTROPHIED PHARYNGEAL TONSIL AS THE EXCITANT IN SUPPURATIVE OTITIS.

M. D. LEDERMAN, M.D.

ABOUT a year ago I had the honor of presenting a paper before the Otological Section of the Pan-American Congress, relating in part to the subject at present under consideration. At that time my observations did not permit me to positively assert that the post-nasal growth was the direct cause of the suppurative disturbance, as antiseptic treatment of the ears was continued for a time after the removal of the irritation. Since then I have purposely avoided prescribing aural antiseptics after pharyngeal operations in a number of cases, in endeavoring to ascertain the immediate effect of the surgical treatment.

The cases selected were manifestations of suppurating middle-ear disease, not complicated by exuberant granulation tissue, but in which local treatment had been carried out for some time previous without arriving at the desired result. In some of the patients the aural discharge had existed for a considerable period, resisting the usual therapeutic means, but ceasing surprisingly soon, after ablation of what proved to be the exciting cause. That these growths are a distinctive feature in the production of suppurative otitis, especially in children, where the disease remains in activity for sometimes many years, is clearly proven by the histories of the cases which I report later on.

When we recall the anatomical relationship existing between the rhino-pharynx and intra-aural cavities, we can readily appreciate the untoward influence arising from the lymphoid hypertrophy. Intra-tympanic air renewal is an essential element towards maintaining normal auditory perception, and we may reasonably trace the majority of middle-ear diseases to some derangement of this important function. This inter-

change of air depends mainly upon the patulence of the Eustachian tubes, and as the latter are not constantly open, increased air pressure in the naso-pharynx must exist before proper ventilation of the middle ear can take place. Voluntary movements of the soft palate are accompanied by an opening of the tubal orifice, and the lifting of the soft palate augments the pressure in the naso-pharynx, thus assisting in air renewal. Adenoid tissue occupying this region, obviously interferes with these essential movements by encroaching upon the aërial boundaries, and by antagonizing the action of the levator palati and pharyngeal muscles. The diminished atmospheric pressure permits a dilatation of the blood-vessels of the mucous membrane lining the middle ear, which is soon followed by aural symptoms. These growths may give rise to a hypersecretion of the glandular structure in the immediate vicinity, some of which may find its way into the Eustachian tubes during the act of deglutition, thus exciting an inflammatory process.

After frequently observing the agreeable effect of the radical treatment applied to the pharyngeal obstruction, in suppurative manifestations of a chronic nature, which have resisted the usual local measures for many years in some instances, I feel we are justified in giving this predominating factor our immediate attention whenever it exists. Its presence predisposes the individual to affections of the middle ear, and sooner or later we are confronted with the evidence of its deleterious influence. The situation of the growth necessitates mouth-breathing, thus causing the subject to inhale air, which is drier, colder, and less free from impurities than that coming through the channels destined for its passage. Retarded oxidation is a natural consequence, and structural changes of the pneumonic tissue are liable to follow, thus impairing the general health by maintaining a low status of vitality. Prophylaxis assumes a prominent position in the treatment of aural disturbances, consequently diseases of the nose and naso-pharynx should receive our careful attention. Some observers believe that the location of the lymphoid mass has some bearing upon the form of the disease. Where the tissue principally occupies the pharynx-

geal vault, a suppurative otitis is supposed to be the most frequent sequela; if the hypertrophy arises from the posterior and lateral walls of the pharynx, and is accompanied by thickened folds of the mucous membrane, we have a mechanical occlusion of the Eustachian canal, and a catarrhal process is probably the result.

Out of 456 cases treated, 112 were between the ages of 6 weeks and 17 years. Fifty of this number suffered from a chronic otorrhœa, in whom adenoid vegetations were present. Nineteen (19) of the fifty had enlarged tonsils, either unilateral or bilateral. Sixteen out of the 112 were diagnosed acute suppurative otitis, with pharyngeal complication; of these six had hypertrophied tonsils. The youngest patient operated upon was an infant six weeks old. She had a running ear for two weeks, and the mother stated that the child could not take the breast on account of mouth-breathing. As the little one's existence depended upon removal of the post-nasal disease, same was accomplished by means of the finger. At the end of two weeks we were gratified to learn that the ear discharge had ceased, and the young one was able to take its nourishment in the usual manner. The curtailed histories of the cases herewith offered, corroborate the statement made at the beginning of these few remarks.

CASE I. H. P., male, 10 years old, had a purulent discharge from both ears for over four years. Pain was not severe at any time. Parent attributed disease to a severe cold acquired at the time. Boy is subject to colds, and with each catarrhal attack the aural symptoms would be worse. Local treatment had been carried out for some time previous to my seeing the patient. Examination revealed a moderate collection of pus, giving off a disagreeable odor in both external auditory canals. After cleansing, perforations of both memb. tymp. could be seen in the post. inf. quadrant; the opening in the right drum being the larger. Perforation whistle was readily elicited. Rhino-pharyngeal inspection showed a large mass of adenoid vegetations hanging from the vault. These were removed with forceps, curette, and finger, at one sitting. Ten days later no discharge was seen in either canal; hearing somewhat better to voice; margins of perforation touched with a 4 per cent. solution of arg. nitras., occasional treatment to perforations as

above. After an interval of three months from time of operation, the patient returned, and both drums were found healed ; no discharge since time mentioned ; hearing and general health much improved ; can now understand his teacher at school ; never could before ; articulation decidedly clearer.

CASE 2. N. J., male, 5 years old ; has had a running ear for three years ; exacerbations frequent with severe otalgia, the latter appearing principally at night ; elevation of temperature during first day or two of acute symptoms. Antiseptics and hot water douching were prescribed by family physician, with amelioration of symptoms. Patient was referred for an opinion. Finger discovered soft growths in the vault and in posterior wall of pharynx. Operation was advised and performed with curette and finger. Three weeks later suppuration no longer present ; perforation not visible.

CASE 3. E. M., female, 17 years of age ; double-sided discharge of two years' duration ; has had local treatment ; been using drops for ears, and blisters over mastoid to relieve localized tenderness. During attacks has had considerable febrile movement and pain. Abundant flow of pus from both ears ; no odor ; on inspection found bilateral tonsillar hypertrophy, and finger diagnosed lymphoid swelling in vault and in lateral walls. Double tonsillotomy and adenotomy were performed during the same sitting. For three days after the operation, the aural discharge was stimulated, and then it gradually became less, until it ceased entirely at the end of four weeks. Hearing and general appearance of the patient much improved.

CASE 4. J. T., male, seven months : right ear discharging for two weeks ; occasional pain in the part affected was indicated by child placing hand over same ; sleep not disturbed by pain. Pharyngeal vault filled with soft growth ; removed easily with finger. Three days after removal, some pus was still found in canal, but this disappeared at the end of a week.

CASE 5. C. L., male, 5 years old ; has had O. M. S. C. for over three years, with acute symptoms off and on. Pain was distressing ; prevented sleep ; temperature perceptibly elevated at times ; right ear affected ; slight discharge observed on examination ; perforation at ant. inf. portion of M.T. Considerable "adenoids" in vault and on post. wall ; usual operation. Suppuration stopped in two weeks ; opening in drum not entirely closed. A month later found M.T. healed completely. Voice test showed marked improvement.

The after-treatment in these cases consisted of a mild antiseptic nasal spray (four per cent. solution of boric acid) used every hour for the first day, and then less frequently. A liquid diet was kept up until the condition of the parts permitted the swallowing of solid food without annoyance. If pus was present in the canals after the operation, warm water was used as a douche. No antiseptics were used in the ears. I fully appreciate the great value of antiseptics and deodorizers in aural suppuration, and do not wish to leave the impression that they are discarded by me ; on the contrary, in routine practice I combine their action with the operative interference, and anticipate prompt results—merely refrained from using them in a series of cases to demonstrate the etiological importance of the disease under consideration.

THE RECURRENCE OF LYMPHOID HYPERTROPHY OF THE NASO-PHARYNX.

F. E. HOPKINS, M.D.

I DESIRE to call attention to one phase of the subject of lymphoid hypertrophy of the naso-pharynx—that of the recurrence of the tissue after removal. This point has not received the consideration it deserves, notwithstanding the voluminous writings upon the general subject, and its free discussion by nearly every one interested in diseases of the throat or ear. The text books, for the most part, give but little information upon the point of recurrence; some recent writers even fail to mention it or assert that there is no such thing. Many physicians, since the operation is now so generally done, thinking there can be no recurrence, and influenced by the brilliant results often immediately following the operation, give the patients and friends a too favorable prognosis as to ultimate results.

I will spare you a repetition of the history of the general subject, long threadbare, nor will I dwell upon the pathology, etiology, symptoms, or need of the operation, save as a reference may help to elucidate my subject; nor will it be necessary to allude to more than a small fraction of the literature, from Meyer to Hooper and from Hooper to the present time. I report herewith a few cases, some of which are from my own notes, some were kindly furnished me by friends, and others are from current literature. This list of cases might be much extended—indefinitely so, I think—by personal interviews with those who are operating, although few cases have as yet been put upon record. There are few operators of considerable experience who are not able to recall one or more such cases. This paper does not claim nor purpose to be at all exhaustive. It is designed merely to call renewed attention to

a point of importance, with the hope that greater care, both in operating and in the after treatment, shall make recurrences less frequent.

The first three cases which I report are those of patients who were under my care at the Manhattan Hospital:

CASE 1. Jos. F——, 12 years of age, in poor health, anæmic, and undersized, was referred to me by Dr. Terriberry from the Department for Nervous Diseases, where the patient was under treatment for chorea. His tonsils had been excised at a dispensary three years previously, and a year following the tonsillotomy he had been operated upon at another institution for naso-pharyngeal obstruction. This latter operation had been done under ether, and by a careful and skilful operator. The symptoms of obstruction were entirely relieved for a period of eight months, when they slowly returned. I operated upon this boy, under ether, on May 3, 1894, and removed a large mass of tissue from the vault of the pharynx. He is at present free from symptoms of obstruction, and after operation made a decided gain in every way, including more rapid progress toward recovery from the chorea.

CASE 2. Julia F——, not a relative of the first, 14 years of age, the fifth in a family of twelve children. No family history of tuberculosis or syphilis, but the girl's general appearance was very bad, doubtless largely caused by insufficient food and bad surroundings. At the age of eleven years she had an attack of rheumatism, complicated by a severe sore throat and an acute, purulent inflammation of the middle ear, causing perforation of the tympanum. This patient has the high, arched palate so often spoken of in connection with this class of patients. I operated upon her, under ether, during July, 1893, removing both tonsils and clearing out the naso-pharynx. The symptoms of obstruction were relieved, the hearing improved, and the patient made a marked gain in health. She came back to the Manhattan on May 5, 1894, with a return of former symptoms. Examination showed a large mass of lymphoid tissue in the naso-pharynx, and nasal respiration almost impossible. I again operated, under ether, and so thoroughly cleaned out the naso-pharynx that I feared the patient might suffer from the apparently too radical treatment, and so kept her under observation at the Hospital for a time. No ill results followed this severe operation (although the most radical I have ever performed), and the patient made rapid improvement in all particulars, including hearing, which had again become impaired. Microscopic examination by Dr.

Douglass, the pathologist of the Hospital, showed lymphoid tissue only. Early in the present month (December, 1894) the patient returned, and there was found to be further recurrence of the growth. At present it is not sufficient to cause obstruction to nasal respiration, but there is a lack of resonance to the voice and the hearing is again impaired. Why there is a return of the tissue a second time I am at a loss to say, for after the second removal, nothing but bare bone could be felt in the vault of the pharynx.

CASE 3. J. H., male, 6 years of age, a child in excellent health and of good family history, was operated upon, under ether on May 18, 1893, for the removal of tonsils and of lymphoid tissue of the naso-pharynx. There was relief of the symptoms of obstruction, and the hearing improved without other treatment. After a period of about fifteen months, the symptoms, including impairment of hearing, gradually returned. He was brought back to the Manhattan on December 11, 1894. It is interesting to note that upon examination with the finger, the growth in the naso-pharynx gave one the impression of being a mass of fringe-like projections. The centre was less prominent than the sides, as if the recurrence had been from increase of the lymphoid tissue remaining around the sides of the former mass, which was removed with the Gottstein curette. There was also obstruction in the nasal passage in this case, which had been overlooked in his former treatment. I operated upon this patient under ether on December 18, 1894, clearing out the naso-pharynx, and removing the ecchondrosis of the septum which had obstructed the left naris.

A point of further interest in this case and no doubt also bearing upon the cause of recurrence is the fact that the child—a fine specimen of a healthy infant in the country when he was born—was brought to the city at the age of three years, since which time his sleeping room has been a very small inside room without ventilation in a ground-floor flat, and this room he has shared with an adult.

The following six cases were furnished me by Dr. J. F. McKernon.

CASE 4. W. R., male, aged 11 years, well nourished but mental faculties not up to the average.

Was operated upon under ether by Dr. McKernon, October 2, 1892, for the removal of tonsils and lymphoid hypertrophy of the naso-pharynx. A large mass of tissue, completely filling the vault of the pharynx, was removed with the Gottstein

curette. After removal the finger was swept around the vault, and it was found to be free from all lymphoid hypertrophy.

A little more than a year later—October 12, 1893—the boy was brought back to the doctor with a return of the symptoms which called for the previous operation. Upon examination a large mass of lymphoid tissue was found well anterior in the vault of the pharynx. The Quinlan forceps were used without ether, the operation being finished with the Gottstein curette for the posterior wall of the pharynx, and a large mass of tissue about two thirds the size of the former growth was removed. Since then, up to May 5, 1894, the patient has been entirely free from the distressing symptoms caused by the presence of the growths. A peculiar point about this patient was his extreme dulness, both with regard to books and in playing with other children.

CASE 5. E. R., 9 years of age, brother of W. R., just reported, was brought to Dr. McKernon October 20, 1892, suffering from naso-pharyngeal catarrh and deafness of left ear. Examination showed both tonsils enlarged, and a mass of lymphoid tissue in the naso-pharynx, situated almost entirely to the left of the median line, and extending well forward in the vault and down upon the posterior pharyngeal wall. Under ether the tonsils were removed, and the naso-pharynx thoroughly cleaned out. On September 26, 1893, this patient was again brought to the doctor suffering from a return of all the former symptoms, except the deafness. Examination revealed a mass of lymphoid tissue occupying the old site, *i. e.*, to the left of the median line, both in the vault of the pharynx and upon its posterior wall. Quinlan forceps followed by the Gottstein curette was now used, removing a mass nearly as large as the original one.

Patient last examined May 17, 1894, when he was free from all former symptoms. This boy was well nourished, and except for the local trouble mentioned, seemed in perfect health both before and after the operation.

CASE 6. M. B., female, 7 years old, well nourished, fleshy and large for her age. Was brought to Dr. McKernon suffering from deafness in both ears and a constant desire to clear the throat and nose. Examination showed both tonsils enlarged and vault of pharynx well filled with lymphoid tissue which extended down upon posterior wall of pharynx. On January 10, 1893, under ether, tonsils were removed and vault of pharynx cleared with Löwenberg forceps, which was used because of the extreme narrowness. The Gottstein curette was

then used on posterior wall of pharynx, when examination with finger showed vault and wall completely freed from lymphoid tissue. Eleven months later this child was brought back to the doctor suffering from catarrh of nose and throat, but no return of deafness. Examination of naso-pharynx revealed a mass of tissue present, which was about half as large as the growth previously removed. This was removed without ether by use of the Quinlan forceps. Examination of the vault of the pharynx on November 17, 1894, shows no recurrence. Patient in excellent health both before and after operation, but had always slept in a small room with no ventilation.

CASE 7. A. A., male, aged 6 years, was brought to the doctor for relief of deafness and nasal obstruction. Was operated upon under ether, the tonsils being excised, and naso-pharynx cleared of the mass of tissue present by use of the Gottstein curette. There was complete relief from all symptoms for a period of ten months, when the old train of symptoms, except the deafness, returned. Examination of vault of pharynx showed a mass of lymphoid tissue upon the former site. He was now given ether and the Gottstein curette used to remove the mass.

Up to April 3, 1894, there was no recurrence. Hygienic surroundings of this patient were very bad, apartments lacking ventilation, being a ground-floor flat.

CASE 8. E. K., female 9 years of age, an anæmic child from a tenement-house, was operated upon at the Manhattan Hospital early in 1893 for the removal of lymphoid tissue from naso-pharynx, the Gradle forceps being used. She was brought back to the hospital in July of present year suffering from naso-pharyngeal obstruction. Examination showed the presence of a mass of tissue well anterior in the vault. Under ether this mass was removed with the Quinlan forceps followed by the Gottstein curette. Patient has not been seen since operation.

CASE 9. E. C., female, 3½ years of age, an anæmic and pasty-looking child. Was operated upon by a prominent specialist in London for the removal of lymphoid tissue from the naso-pharynx. The doctor gave a favorable prognosis, stating positively that there would be no recurrence. Eleven months later, October, 1894, the child suffering from a return of former symptoms, was examined, and small groups of lymphoid tissue were found in the vault and upon posterior wall of pharynx. The growths were removed under ether, and by the use of the Löwenberg forceps followed by the Gottstein

curette. In this case the hygienic surroundings were of the best. The parents were wrought up to great indignation over the outcome in the case, since they had been promised that the first operation would be final.

CASE 10. Dr. Butts has reported one case and kindly gave me the notes of another. The first was that of an English girl, 16 years of age, who gave a history of having been operated upon three times under chloroform before coming to this country. Dr. Butts operated upon this patient three times at intervals of two months, completely removing all the tissue at each operation. Twice the lymphoid tissue had returned on the same site. The last operation was apparently successful, as four months elapsed without return, when the patient was lost sight of. Microscopic examination of the tissue removed showed it to be lymphoid hypertrophy.

CASE 11. His second case was that of a boy aged 12 years. Operation was done under ether October 24, 1892, tonsils were removed and naso-pharynx cleaned of obstructing lymphoid tissue. Nothing more was heard of the case until March 26, 1894, when the child was brought to the doctor with a return in a mild degree of his former symptoms. Examination with the rhinoscopic mirror revealed a very perceptible return of the mass of tissue in the vault of the pharynx. About two months before this, the child had what was pronounced to be diphtheria, but in a mild form. From this time it was noted by the parents that there was a gradual return of the old symptoms.

CASE 12. The following case is from the notes of Dr. Emil Meyer. Frank H., aged 3 years. Lymphoid hypertrophy of the vault of the pharynx. The mass was removed under ether by means of Gradle forceps and Gottstein curette, leaving the vault perfectly clear, and resulting in an entire subsidence of all symptoms of obstruction. The child remained well for a period of two years, when the symptoms of obstruction again returning, a second mass of lymphoid tissue was removed under ether.

Dr. Delavan^{*} has reported an interesting case in which recurrence occurred twice. Dr. Jonathan Wright^{*} also has reported a case. Dr. Lavrand,^{*} of Lille, has reported two cases of undoubted recurrence in children aged respectively six and nine years. Dr. Barrett,^{*} Vice-President of the Australasian Medical Congress, said in discussing this subject at the session

in 1892, that he had seen growths return where he had satisfied himself by after-examination that the removal had been thorough; in one case the recurrence had occurred three times. Dr. Quaife,* at the same meeting, after urging the importance of thorough removal, remarked that he had occasionally found that small tags, which were quite impalpable to the finger at the time of operation, have afterwards blossomed into vegetations full grown, though certainly not very extensive.

In the discussion of a paper upon "Post-Nasal Growths in Children," read by Mr. Owen ' before the Harveian Society of London, Mr. Butlin said that although he had operated for removal very many times, and many of his cases were under observation from one to seven years, he was cognisant of only one case in which there was undoubted recurrence after complete and careful removal.

Mr. Mark Hovell at the same discussion mentioned a case which had been operated upon twice before she came under his care, and in which he had found it necessary to repeat the operation three times after intervals of a few months, on account of re-development of the growth.

Dr. Scanes Spicer said recurrence occurs only after imperfect removal.

Dr. Felix Semon said that in his experience, in no class of cases was a repetition of the operation more frequently required than in those in which the finger nail had been used as the instrument for removal.

Lennox Browne said that recurrence is rare, and mentioned no cases.

This discussion is of some interest since it may be taken as an expression of English specialists upon the subject, so many men of prominence having taken part in it.

Woakes ' says: "I do not believe in the recurrence of the growths after thorough operation. When this appears to happen it is due to some of the smaller ones having escaped removal; these developing later on, are then looked upon as a return of the disease."

Hooper,* in his paper on "Adenoid Vegetations in Children, their Diagnosis and Treatment," stated that "the growths do not recur after removal."

McBride¹⁰ does not mention the possibility of recurrence.

J. Solis Cohen¹¹ says "there does not seem to be any disposition to repullation of these vegetations after thorough evulsion or destruction."

Macdonald¹² in his work gives no special information on the subject in hand.

Burnett's¹³ recent work is the most unsatisfactory of all, for we are told that "moderate curetting or the biting or burning off of a few of the most prominent nodules, combined with the use of iodine and the proper treatment of the whole nasopharyngeal tract, is sufficient in the great majority of cases."

Dr. Jas. B. Ball,¹⁴ in a text-book just published in London, says: "Once thoroughly removed, adenoid vegetations do not recur. When, as sometimes happens, a second operation is required, this is due to small vegetations having been left behind, which swell up on removal of pressure from the surrounding masses."

Dr. Ingals¹⁵ in his work, speaking of the use of such agents as galvano-cautery, scraping with the finger-nail, etc., says "the operation thus is usually less complete than when done by suitable forceps, and therefore recurrence is more likely to take place."

Referring now to other writers, whose articles have appeared in the recent journals, we have the carefully-prepared paper of Dr. De Roaldes,¹⁶ of New Orleans, who quotes and endorses Hooper's statement that "the growths do not recur." Dr. J. Morrison Ray,¹⁷ of Louisville, who says: "if once thoroughly removed, there can be no return." Dr. W. Meyjes,¹⁸ of Holland, who states that "the opinion that the adenoid vegetations will grow again after removal is false, and only caused by the fact that the tissue was not completely removed." Dr. A. B. Thrasher¹⁹: "under complete anæsthesia there is time to entirely extirpate the growths, so that very rarely will a second operation be required."

The foregoing references may be taken as fairly representative of what writers have stated upon the question of recurrence. Thus it is seen that if we depend upon this source alone for information, we are likely to be misled. It is but just to say, however, that a few have laid greater stress upon

the possibility of recurrence Among these Bosworth²⁰ refers to Meyer's report of thirteen cases of recurrence, in his first series of one hundred and two cases. Meyer made this report as long ago as 1881, eleven years after his first paper. French,²¹ too, insists most strongly upon complete removal of the tissue that recurrence may be prevented. It must be admitted that recurrence does take place and that it occurs more frequently than the text books would lead one to infer; also that it may happen even though every vestige of the tissue has been removed from the naso-pharynx.

It is probable that many more cases of recurrence will be mentioned within the next few years, than have yet been put upon record. The rapid method of operating is popular, and so many men are now doing the operation that the chances for imperfect removal are largely increased, involving the greater probability of recurrence. If this be true, it is well that the fact be clearly understood that we may be more guarded in prognosis as to ultimate results, and the more carefully make use of such measures as shall tend to prevent recurrence.

What then are the practical deductions to be drawn from our consideration of the subject? I confess I have but two points to offer. I would join with those who insist upon complete removal of the tissue—under an anæsthetic in children up to fifteen years of age—and suggest that each case be given more attention in the after treatment. As to the time for operating or the preliminary use of tonics, Dr. French²¹ well says, "the sooner the operation is performed the better, for there can be no more valuable tonic than that which results from re-establishment of nasal respiration." Then one must assure himself that there is no obstruction in the nasal passages, or if present, correct it, that there may be no further hindrance to nasal respiration. After operation the child should take *Syr. fer. iodi* for some weeks, with whatever added remedy may seem to be indicated, bearing in mind the possibility of constitutional taint of rheumatism, tuberculosis, or syphilis. A further point of prime importance is that of the hygienic surroundings of the patient, particularly the child's sleeping room. We have conditions at opposite ends of the social scale

productive of similar results. The poor often live in small, overcrowded, and ill-ventilated rooms; the rich frequently in overheated and also ill-ventilated apartments. The evil effects upon the patient are similar in the two cases. This difference between the temperature of the overheated houses and that out of doors, presents the most constant and common source of frequent coryzas. These conditions ought, as far as possible, to be corrected, because "this lymphoid tissue evinces a strong tendency to augmentation in bulk upon slight provocation, so that any cause of increased blood supply will be sufficient to start renewed hypertrophy."¹ If then the child is again exposed to the same conditions which caused the hypertrophy, we must expect that recurrence will sometimes happen, and especially in those cases where the removal was not sufficiently thorough.

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ICHTHYOL IN RHINITIS ATROPHICA FÆTIDA AND IN LARYNGITIS TUBERCULOSA.

T. PASSMORE BERENS, M.D.

ICHTHYOL (sulpho-ichthyolate of ammonium) when applied to the normal mucous membrane of the nose, calls forth a profuse watery secretion accompanied by sneezing lachrymation and a smarting burning pain often reflected to the post-orbital region and to the occiput. The pain quickly disappears as does the lachrymation, but the secretion continues more or less profuse for several hours. Ichthyol, unlike glycerine, does not leave the membranes parched. When ichthyol is applied to the normal larynx it is apt to excite some spasm, followed by a more or less violent attack of coughing, which is accompanied by considerable burning and some pain, which, however, is probably caused by the spasm. After a half hour, these disagreeable symptoms disappear and the patient is much the same as before, excepting a slight collection of secretion that may persist for an hour or two. When used locally in inflamed conditions of the larynx, ichthyol acts as an analgesic after the first symptoms—those of irritation—cease.

As an antiseptic against the bacillus mucosus ozenæ, Abel (*Centrlb. fr. Bakt. u. Prstk.*, 1893, Bd. xiv.) found ichthyol to be weak although not entirely inefficient.

No reference was found to the action of ichthyol on bacillus tuberculosis.

In the treatment of atrophic rhinitis I believe the late Dr. David Phillips, of this city, was the first to call attention to the fact that ichthyol was of benefit. He used it as a spray in a five per cent. solution, with "keroline" as the solvent. This treatment he described in 1891, before the Medical Society of the County of New York.

This treatment, probably on account of the small percentage of ichthyol employed, was only partially successful. In 1893 I began the use of pure ichthyol in atrophic rhinitis with ozæna. Since this time it has been used in more than seventy cases. The method of application in severe cases is by means of a large cotton tampon, saturated with the drug, inserted into each nostril and allowed to remain fifteen minutes. The patient is then easily able to expel most of the scabs; they having been loosened by the copious secretion. An applicator, armed with a small amount of cotton saturated with ichthyol, is then used to cleanse all the nooks and crannies, especial care being taken with the spaces between the turbinated bodies and the outer wall of the nose. Considerable pressure is used in the rubbing, thus massaging the mucous membrane, as it were, with pure ichthyol. In less severe cases, or where the scabbing is slight, the tampon is not used. In the pharyngitis and laryngitis sicca so frequently occurring in these cases, pure ichthyol is applied directly to the parts affected by means of the cotton applicator. As a rule applications are made to the nose three times weekly and to the pharynx and larynx only when they are excessively dry, or when they cause much discomfort to the patient—as it is found that in the milder cases the nasal secretion will sufficiently moisten the pharynx and larynx. After the scabbing is under control the patient is usually given an ointment containing ten per cent. ichthyol and five per cent. eucalyptol with vaseline as the base, this to be used as a part of the toilette twice daily at home, by inserting a large amount in each naris and forcibly inhaling until felt in the pharynx. While not agreeable patients find so much relief from this ointment that they will persist in its use. It melts readily at body heat and seems to diffuse itself throughout the nose, at any rate its effect is certainly felt by the whole nasal chamber, as evidenced by the fact that rarely do scabs form even in the upper meati during its prolonged use.

The cases treated, are not as far as could be determined, complicated with syphilis nor with disease of the accessory sinuses.

CASE 1. J. H—, female, age 26, applied for treatment October 1, 1894, with the following history: She had always been healthy and without catarrhal symptoms until seven years before, when she suffered from naso-pharyngeal diphtheria, which was followed by paralysis of the soft palate and a profuse muco-purulent discharge. Under the treatment of her physician the paralysis gradually was relieved, but the discharge became worse, until at the end of a year it became offensive and scabby. She had occasional epistaxis. Her pharynx became dry, causing considerable dysphagia. These symptoms grew worse, and when first seen she presented the following: Both middle turbinates large and covered with a thin layer of dried muco-purulent discharge, as also is the mucous membrane of the septum, the floor of the nose, and the considerably atrophied inferior turbinates. In the right inferior meatus is a large scab, removal of which caused considerable hemorrhage. The odor is marked. The pharynx is glazed and very dry. She is poorly nourished and anæmic. Pure ichthyol was thoroughly applied, by means of a cotton-armed applicator, three times weekly, and an iron tonic prescribed. Six weeks later the scabbing and odor were markedly less, and she had not had an attack of epistaxis for four weeks. The mucous membranes were of considerably healthier appearance and the pharynx moist. She was given a ten per cent. ichthyol ointment for home use and ordered to report once weekly for treatment. Four weeks later the whole nasal cavity was clean—no scabs, no odor—the mucous membranes were secreting, and the pharynx was moist. She was then not treated at the clinic for a month, but used the ointment at home once daily. At the end of this time she reported that she had used nothing in her nose for four days. With the exception that the inferior turbinates were slightly smaller than usual, her nose was perfectly normal in appearance. The full treatment of this case occupied but fourteen weeks. It is reported under Class I. as "much relieved," and is a type of this class.

CASE 2. M. G—, female, age 30, entered the clinic November, 1892. She had been treated for "ozæna" and recurring attacks of dysphagia for years without relief. She was treated with hydrogen peroxide, alkaline sprays, douches, salt water, and, in fact, all the old clinical methods were tried in succession, with decidedly negative results. It was the old story—douche in the morning and scabs at night, or douche at night and scabs in the morning. Nothing gave her relief, or at the most for only a few hours. In the latter part of 1893 her nasal condition presented the following: Both infe-

rior turbinates much atrophied, both middle turbinates thick ("club-shaped") and covered with dry secretion, which extended onto the septum and outer walls of the nose; large scabs in the inferior meati; typical dry pharynx, and chronic laryngitis sicca, with scabs. The odor was very offensive. At this time applications of pure ichthyol were made three times weekly to the nose, pharynx, and larynx by means of the cotton applicator. Considerable massage was used in the applications. The first application caused considerable discomfort for several hours—sneezing, pain, and excessive watery discharge. This was, however, followed by a feeling of comfort, especially in the larynx and pharynx. From this time on the scabbing and odor became markedly less. The nasal treatments were continued three times weekly for four months, with an occasional laryngeal application. She was then given a vaseline ointment containing ten per cent. ichthyol and five per cent. eucalyptol, to be used twice daily at home. For the three months following she continued the ointment, with very occasional treatment at the clinic. She improved steadily. January, 1895, she was seen, and reported that she found it necessary to use the ointment only two or three times weekly, that she had not had a scab or odor for months, that her pharynx was always moist, and that she was no longer troubled with hoarseness. Her inferior turbinates had increased in size. This was not due to temporary erection of the tissue, for she was seen several times under entirely different conditions, each time always with the same result. The total time of treatment of this case was a year. She is reported as typical of Class II., and I have stated her to be "much relieved."

CASE 3. J. B—, male, aged 26. This case, like the one preceding, was also treated for months by the various methods known to the specialist, with even less satisfactory results. In addition to local treatment, he had been given courses of iodide of potash, mercurials, and even sulphide of calcium, both in large and small (third trituration) doses. Nothing gave him relief. Early in 1893 he presented the following: Broad head, flat "saddle" nose, excessive odor, which was peculiarly penetrating and sickening; both nostrils full of scabs, a mixture of hard, dried, and thick creamy, greenish muco-pus. On removal of these masses, the location of the inferior turbinates could be determined only by mere ridges. The middle turbinates were nearly absent. The right superior turbinate could be seen. The superior pharynx and swelling of the Eustachian tube plainly visible. The whole mucous membrane seemed like an interlacing of cicatrices. The patient was

anæmic and very despondent. He said that he could not get work, even in the most menial position, on account of the odor. The method of applying the ichthyol in this case was by means of large tampons, which were inserted into each nostril and allowed to remain a half hour before removal, when he was able to easily "blow out" the scabs. This was necessary, for it was really too revolting for any one to cleanse his nose before the scabs were first removed. After the expulsion of the scabs, ichthyol was used, by means of a cotton-armed applicator, to cleanse all the nooks and crannies. These treatments were made three times a week for nearly a year. In this time he used a 20 per cent. ichthyol ointment two and three times daily. His improvement was rapid. After six months' treatment he obtained employment in one of our large hotels as porter. The scabbing became very much less, and the odor disappeared; his general appearance was much better, and his manner had changed—in fact, his nature had undergone a decided change for the better. He still visits the clinic about once weekly, and must still continue the home use of the ointment. He is considered typical of Class III. and is termed "much improved."

Not to be tedious, the remaining cases are classified as follows:

I. Slight atrophy with pharyngitis sicca, scabs, and odor.

II. Advanced atrophy with pharyngitis sicca and often laryngitis sicca, scabs, and odor.

III. Very advanced general atrophy with almost complete loss of the turbinates. Much odor and large offensive scabs. Marked scabbing in pharynx and laryngitis sicca, with or without scabs.

In Class I., of the eighteen patients treated, eleven were "much improved," and seven improved.

In Class II., of the twenty-eight patients treated, seventeen were "much improved," five were improved, and six not improved.

In Class III., of the thirty-one cases treated, ten were "much improved," twelve improved, and nine not improved. Of the total number—seventy-eight—treated, there were thirty-eight "much improved," twenty-four improved, and only fifteen not improved. Of these fifteen it may be stated that they were

very irregular in attendance, frequently remaining a month with no treatment whatever, so that the treatment did not have a fair trial.

In Class I. the patients were treated locally three times weekly with pure ichthyol on an average for two months, then given an ointment, described above, for home use.

In Class II. the average was about four months of thrice-weekly applications, after which the home treatment sufficed, with very little more than an occasional local treatment at the clinic of pure ichthyol.

In Class III. the average was about nine months of thrice-weekly applications, but in many of these cases the ointment was begun very early. Several of these cases marked "improved" find it necessary to visit the clinic once or twice a month for local applications of pure ichthyol. Nearly all the cases treated were given iron internally, and instructed to pay strict attention to personal hygiene.

The word "cured" has purposely been avoided. Without entering into a discussion of this word in its connection with atrophic rhinitis, it should be stated that the cases reported as "much improved," especially in Classes I. and II., might be called cured, in that with due precautions they prevent a recurrence of their symptoms. It is merely as much a matter of toilette with them to prevent a recurrence as it is for one to prevent the accumulation of tartar on the teeth.

TUBERCULAR LARYNGEAL CASES.

The following are cases of laryngeal tuberculosis treated by local applications of ichthyol firmly rubbed into the diseased surfaces :

CASE I. S. W., male, age 35. Porter and mixer in liquor cellar, came for treatment in November, 1892. He had been suffering for the preceding four to five months with hoarseness, dysphagia, cough, much expectoration, and considerable loss of weight and strength ; profuse night sweats. Laryngeal examination revealed œdematous arytpænoids, thick ulcerated

cords, and a large ulcer in the inter-arytænoid space ; epiglottis red and small ulcer on its upper border. Much muco-purulent discharge in and about the larynx. Mucous membranes very pale. Tubercle bacilli in the sputum. The right pulmonary apex was shown on physical examination to contain a cavity about two inches in diameter.

Pure ichthyol rubbed very firmly to the ulcers, causes some pain and a slight spasm of the glottis, followed by rather profuse secretion, which persisted several hours, but was followed by a sensation of comfort. This treatment was continued daily for a month, and then three times weekly until June. During this time the ulcers on the cords and epiglottis had disappeared, and the ulcer between the arytænoids had shrunk to the size of a pin-head. This healed before July, leaving a small teat like projection in its place. The dysphagia had left him before the end of the first month of treatment. Along with the local treatment he was given cod liver oil, an iron tonic, and strict directions in regard to hygiene and diet. During his treatment he did not lose a day's work ; his work confined him to a cellar. His gain in weight was marked,—more than twenty pounds. Since his last treatment in the latter part of June, 1893, he has had no hoarseness, dysphagia, nor loss of weight. His cough is absent, and physical signs, while revealing the cavity, show it to be dry. He has no expectoration. He was shown before the November meeting of the Laryngological Section of the New York Academy of Medicine.

CASE 2. Tailor, age 26. Applied for treatment September, 1893. He had been growing hoarse for nearly a year, with progressive loss of weight and strength, night sweats, and cough. Severe dysphagia. He is much emaciated, weighing 125 pounds. On examination his larynx reveals a large ulcer between the arytænoids, which are œdematous. The cords are covered with dirty grayish discharge. The epiglottis red, swollen, and showing several pin-head ulcers on its posterior surface and upper border. Mucous membranes very pale. Tubercle bacilli in sputum. On physical examination both apices showed infiltration.

Applications of pure ichthyol were made daily. The first few applications caused much spasm and some pain, but after a week's treatment these symptoms grew less, and the patient reported that he experienced less pain in his larynx, and that he could swallow with much more ease. In a month the patient's general condition was improved ; the dysphagia disappeared entirely, and the œdema of the arytænoids was much less, but a growth of granulation tissue appeared in the inter-

arytænoid space. The cords were clearing, and the ulcers on the epiglottis were healed. At the end of the second month his weight had increased ten pounds, and his larynx had still further improved, but the granulations in the inter-arytænoid space had increased to a point indicating curetting, which was accomplished by means of the Heryng curette, followed by pure ichthyol. In two months more his weight had increased twelve more pounds, or a total of twenty-two pounds in four months. He could now phonate a little, and his larynx was clear of all but the now small ulcer between the arytænoids. In April, 1894, after two weeks of non-treatment, a new ulcer appeared, this time on the right arytænoid. This was immediately curetted and ichthyol applied. In June the larynx was free from ulceration. He had gained in all forty pounds, and had a moderately clear phonation. In July he felt well and stood the heat nicely. During my vacation of two months he became hoarse again, and on my return in October he had a well-developed ulcer on the right ary-epiglottidean fold externally. This ulcer yielded very readily to ichthyol, and in a month was closed. In December the inter-arytænoid space again broke down. It was curetted and treated vigorously with ichthyol, this time not successfully. At the present writing, January, 1895, both arytænoids are œdematous, granulation tissue filling up the inter-arytænoid space, and the cords are ulcerated with considerable swelling of the ventricular bands. He is holding his weight, but his strength is failing and his cough is worse. The involvement of the apices is more widely spread. This man is one of the class termed "sweaters"—working in over-crowded tenements with little or no ventilation, meagre diet, and paying no heed to personal hygiene. The local treatment in this case was supplemented by cod-liver oil, iron, and as liberal a diet as possible.

Records of four other cases are at hand. Two of these have had no return since their last treatment twelve and fifteen months ago, respectively. One of them, a cigar-maker, continued at his trade during the treatment, and is still working at it. The other case was under the most favorable hygienic and climatic conditions, and possibly might have recovered without local treatment, although the treatment undoubtedly hastened the healing, and as she expressed it, she "had the comfort of knowing that something was being done for her." All of these cases had pulmonary involvement and tubercle

bacilli. The two remaining cases died of general tuberculosis, although much relieved of their painful laryngeal symptoms by the ichthyol treatment.

Conclusions.—Ichthyol is curative in *chronic atrophic rhinitis (ozæna)*, and in *laryngeal tuberculosis*.

It excites secretion, is a deodorant, an absorbent, and a local anodyne.

A CASE OF FIBROMA OF THE NASAL FOSSA.

CHARLES H. KNIGHT, M.D.

TUMORS of the nasal fossæ made up in part of fibrous tissue, are not uncommon, many cases of fibro-sarcoma and of fibro-myxoma being on record. Fibromata of the nasopharynx are much more frequent. The explanation of this fact, generally accepted, is that the deep layer of fibrous tissue is denser and more plentiful at the upper and posterior parts of the nasal chambers and in the vault of the pharynx, than elsewhere in the upper air tract.

In a paper read at the Ninth International Medical Congress in 1887, Casselberry tabulated eight cases of intra-nasal tumor, in three of which, including one of his own, the diagnosis of fibroma was verified by the microscope. One was a fibro sarcoma, one a fibro-myxoma, and the remaining three were designated fibromata, although no microscopic examination was made. In one of these last, death resulted from hemorrhage following an attempt at removal of the tumor, a fact which would tend to throw suspicion on the diagnosis. By many observers vascularity is said to be a characteristic of a fibroma, and epistaxis is mentioned as an early and constant clinical sign. Spontaneous hemorrhage, as a frequent occurrence or in excess is always suggestive of malignancy. Whatever may be the rule as to the naso-pharynx, it is believed that pure fibromata of the nasal fossa, at least if pedunculated, are not dangerously vascular growths. A diagnosis of these neoplasms should always rest upon the microscopic examination. The admixture of sarcomatous, myxomatous, or other elements in many of the cases on record reduces the number of genuine fibromata to a very small figure. On these grounds we should be justified in excluding a large proportion of Bosworth's collection of forty-one cases of so-called fibroma.

Since the date of this report a single case of fibroma has been reported, that exhibited by Gerber, January 8, 1894, and referred to in the *Journal of Laryngology*, April, 1894. In 1893, Stoker gave the history of a case of what he calls "soft fibromata," vascular papillary growths of the middle and inferior turbinated bodies, evidently not genuine fibrous tumors. A similar case of "soft fibroma" of the nasal septum has been reported by Victor Lange, and is abstracted in the *Journal of Laryngology*, February, 1894. In the *Charlotte Medical Journal*, January, 1895, Dr. W. H. Wakefield reports a case of nasal fibroma. It does not appear that the diagnosis was confirmed by the microscope, and the precise implantation of the tumor remains in some doubt its point of attachment not having been determined before its removal.

The history of my own case is as follows :

G. T. D., *æt.* 21, came to me in 1889 with the usual symptoms of nasal catarrh, which had been present for several years. The left nostril in particular was obstructed. There was no pain. The sense of smell was not impaired. There had never been any hemorrhage. The general health was excellent, except for a persistent cough with moderate expectoration, which led the patient to apprehend pulmonary disease. The lungs, however, were sound. On anterior rhinoscopy the septum was seen to be somewhat deflected to the left, and far back in the left nasal fossa could be detected a smooth, movable tumor attached to the posterior end of the middle turbinated body. In the rhinoscopic mirror the tumor appeared nearly to fill the left choana. It was smooth, round, symmetrical, and decidedly darker in color than the average oedematous polyp, and, moreover, was evidently denser in structure. Nevertheless, it was thought to be an ordinary gelatinous growth containing an unusual proportion of fibrous tissue.

The removal of the tumor was easily accomplished under cocaine, by means of the cold wire snare, and was followed, of course, by great relief as regards the breathing, and by considerable improvement in the general catarrhal symptoms. The after-treatment consisted in the use of sprays, cleansing and sedative in character, and the reduction of turbinated hypertrophies with the galvano-cautery. There has been no recurrence of the growth.

The chief interest of this case centres in the microscopic

character of the tumor, which is a *pure fibroma*. Several sections have been examined by my friend, Dr. Jonathan Wright, who reports that he has been unable to find the slightest trace of so-called myxomatous structure. The density and absence of vascularity in the growth are very marked, and near the surface, at certain points, collections of small round cells suggestive of sarcoma, but of inflammatory origin, are conspicuous. In general the fibrous structure is perfectly distinct, and becomes more marked towards the middle of the tumor.

LARYNGEAL NEOPLASMS.

WALTER F. CHAPPELL, M.D., M.R.C.S., ENG.

DURING the past year an unusually large number of laryngeal diseases have been treated in my service at the hospital. Although they are not all of equal importance, every affection of this part of the respiratory tract may be considered as having an interest of more or less individual nature. Especially is this true when the larynx is the seat of a new growth, the size, shape, situation, and nature of which may seriously alter the character of the vocal sounds and interfere with the functions of respiration and deglutition to such a degree as to imperil the life of the patient. Unfortunately, this condition is often reached before a physician has been consulted. Hoarseness, with impaired respiration and deglutition, are most frequently the initial symptoms of a serious disease of the larynx; their appearance, however, is usually so insidious that they may have existed for months without attracting much attention or causing discomfort. In due time something occurs which determines the necessity of a laryngeal examination, and the serious import of the symptoms is appreciated. Who can estimate how many lives might be saved if it were possible to see and make an early diagnosis of every case of tubercular and cancerous disease of the larynx? The histories of the following five patients are selected, as being the most unusual and interesting cases of laryngeal neoplasms, which were treated in my service in the throat department of the hospital during the year:

CASE 1. Nora Ring, aged 5 years, came to the hospital March 19, 1894. Her mother said the child had been somewhat hoarse since birth, and suffered from frequent attacks of croup, especially during the winter months. For the past six months her breathing had been labored and was

accompanied by choking and suffocative attacks at night. Three weeks before her visit to the hospital she contracted measles, and during the attack there was considerable irritation of the upper respiratory tract. The recovery from the exanthem was uneventful, but the laryngeal symptoms continued. Her condition on visiting the hospital was one of great discomfort—face pale and anxious, with bluish lips and alæ nasi much distended at each inspiration; the latter was difficult and labored, calling into action the accessory muscles during each inspiratory effort. The noisy respiration could be heard several feet away. Owing to the distressed breathing, no examination of the larynx could be made at this visit. Hot steam inhalations, with fomentations and a $\frac{1}{4}$ of a grain



FIG. 1.
Congenital Papillomata.

of bichloride of mercury, were prescribed three times a day, and the child sent home. The temperature at this time was 100° F. and pulse 110.

On the evening of March 20th the respiration became so labored that my assistant, Dr. Frank K. Roarke, was called. He introduced an O'Dwyer tube, but owing to the thick, tenacious character of the mucus in the larynx and trachea, air would not pass readily through the tube. Respiration being more embarrassed by its introduction, it was removed, a high tracheotomy performed, and a small tracheal tube introduced. The next day the patient was admitted to the hospital, the pulse rate being at this time 136 and the temperature $102\frac{1}{2}^{\circ}$ F.

Recovery from the tracheotomy was uneventful, and on the 7th of April the patient was able to walk about the ward. During the three weeks following admission to the hospital, a spasmodic cough became a troublesome feature, accompanied by the expectoration of yellow, ill-smelling, stringy mucus.

Creosote and terebene were given alternate weeks for a month, improving the character and diminishing the quantity of the mucus. The tracheal tube was removed daily, and the wound and as much of the tracheal wall as could be reached with bent probes was cleansed with cotton dipped in peroxide of hydrogen. After the frothy mucus had been wiped away the tube was reintroduced. Vinum ferri citratis was given from March 30th to April 17th, when it was discontinued and liq. potassii arsenitis administered until the 20th day of May. This greatly improved the physical condition. Prior to this time no air had passed through the larynx when the tube was removed, but some respiration was now possible. The catarrhal symptoms of the trachea and upper bronchial tubes having greatly diminished, a laryngoscopic examination was made. The rima glottidis was found to be packed with irregular, red papillomatous masses of various sizes and shapes, which were seemingly attached to the ventricular bands and completely covered the vocal cords. Shreds of yellow mucus occupied the spaces between the growths. Alkaline sprays were employed daily in the larynx for some weeks, and a laryngoscopic examination made from time to time. About the middle of June, the papillomatous masses had lost their oedematous appearance and diminished so much in size that their individual characters could be observed and their attachments well determined. Prior to this observation, the laryngeal obstruction seemed to result from large, fleshy, fringed masses, as already described, but from a sketch taken in June and represented in Fig. 1, it will be seen that there were really seven distinct papillomata, which, owing to the catarrhal laryngitis had become swollen and oedematous. There were two papillomata on each cord, one in the inter-arytenoid space, and another in the anterior commissure near the lower part of the cushion of the epiglottis, but above the cords; while another was attached to the anterior wall of the trachea immediately below the cords. The latter growth could be seen through the opening in the trachea and, as will be related, was subsequently removed, through the tracheal wound. During the succeeding summer months, creosote was administered daily and the patient allowed as much out-of-door exercise as possible. The papillomata gradually diminished in size until by the 1st of October, those on the cords and the one in the posterior commissure had entirely disappeared, leaving the cords red and somewhat thickened. The growth in the anterior part of the larynx had diminished in size, but had a firm, nodular appearance. As the patient was anxious to leave the hospital, the removal of the remaining portions was decided upon, and effected after

considerable training of the throat. The removal of the papillomata above the cords was effected in three sittings with Mackenzie's forceps. The subglottic mass was also detached in part with the forceps from above, but the remaining portion was removed through the tracheal opening by a bent curette, the cutting surface being made angular to fit between the wings of the thyroid cartilage. On the 10th of October the tracheal tube was removed and the wound closed; and on the 17th the child left the hospital with the tracheal wound healed. The vocal bands were of a pale pink color, and granular in appearance, and the voice of a hoarse, rasping character, considerably above a whisper. She has since visited the hospital once a week, and had the larynx sprayed with a solution of chloride of zinc. The improvement of the voice gradually increased until it became quite distinct, but it remains somewhat weak.

This case is of unusual interest, as there is every evidence from the history of the hoarseness, shortness of breath on exertion, and frequent attacks of croup, that it was one of congenital papillomata, and although Mackenzie, in 1871, considered congenital papillomata as unproven, their presence is now admitted by most observers. It furthermore raises the question whether tracheotomy, producing functional rest of the larynx, may not in some cases favor atrophy of the papillomata and their complete and permanent disappearance. Certainly in this case, although only three months have elapsed since the tracheal wound closed, there is not the slightest evidence of recurrence, and from week to week the cords become thinner and paler, and the voice improves in ratio. My somewhat limited experience with the treatment of laryngeal papillomata in children by thyrotomy has given much less favorable results, as the frequent recurrence of the growth required the operation to be performed two or more times on each case and left the voice much impaired.

The next case, represented in Fig. 2, is one of sarcoma of the epiglottis, and I believe, is the largest one reported in the literature of laryngeal neoplasms as originating in this situation. The location is not an unusual one for cysts, papillomata, fibromata, etc., but only two authentic cases of sarcoma of the epiglottis have been reported; one by Morrell Mackenzie in

his essay on one hundred cases of laryngeal growths, and another by Dr. Burow in the *Berlin. klin. Woch.*, No. 8, 1887. In Mackenzie's case, although the growth was comparatively small, it produced almost complete aphonia and extreme dyspnœa. Burow's patient, and the one now presented, although having much larger growths than Mackenzie's patient, gave little evidence in their voices of the size of the neoplasms. Burow describes the voice of his patient as being peculiar in tone. The voice of my patient was flat, and although the lips

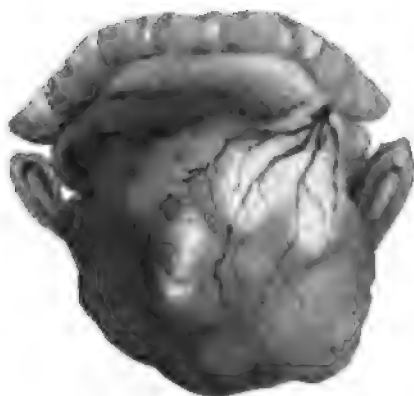


FIG. 2.

Sarcoma of the Epiglottis.

and tongue made the movements for vocalization, they seemed devoid of sound, the voice apparently coming from a distance. The difference in character of the vocal tones was doubtless due to the positions of the neoplasms which in one case infiltrated the cushion of the epiglottis, and was just large enough to insinuate itself between the cords and prevent their coaptation, and at the same time diminished the area of the respiratory tract in its most important part. The large size of the other neoplasms and their higher attachment kept them well above the vocal bands, and interfered but little with their functions.

CASE 2. Bridget O'R. Age 32 years.

Came to the throat department of the hospital July 23, 1894, complaining of choking sensation in the throat. Family history negative.

Personal History.—Always well until four years ago, when she had nervous prostration. About a year later she noticed that her voice was rather flat, and it required a little effort to produce a clear sound. Eighteen months from the first appearance of the vocal change, she experienced some difficulty in swallowing, and the solid particles of food seem to lodge near the root of the tongue. This condition rapidly increased, and for six months previous to her visit to the hospital, she had been unable to take anything but liquid nourishment.

Present Condition.—Patient looks pale, emaciated, and somewhat cyanotic, and coughs incessantly, owing to a tickling sensation in the region of the larynx. Respiration about normal, while the patient is quiet, but slight exertion makes it rapid and labored. While asleep the respiratory efforts have become so alarming that the friends of the patient, with whom she stays, insisted that medical advice should be had at once, which accounts for her visiting the hospital. No pain had been experienced and the performance of ordinary duties produced so little discomfort that she had never before consulted a physician.

On laryngoscopic examination, a round, somewhat lobulated white tumor about the size of a hen's egg was seen at the base of the tongue and behind the epiglottis, almost filling the oropharynx and covering the larynx. Its location and appearance is very well shown in Fig. 2. The mass was elastic and freely movable, and being attached by a rather long and narrow pedicle, it came well up into the back part of the oral cavity during deglutition.

Several large vessels coursed over its upper surface. The white glistening appearance and feeling of fluctuation on palpitation, suggested a large cyst. A puncture was made well into the centre of the mass with a laryngeal knife, but resulted only in a severe hemorrhage. The patient was admitted to the hospital on the 25th of July and an attempt made to remove the growth, but the administration of both ether and chloroform embarrassed the respiration to such a degree that a low tracheotomy was performed. The patient by this time was very cyanotic, respiration shallow, and the cardiac action so weak that considerable difficulty was experienced in reviving her. Convalescence from the tracheotomy was rapid and uneventful. On August 3d, after finding that the attachment was limited to the margin of the epiglottis on the right side, an eight

per cent. solution of cocaine was applied and a loop of platinum wire thrown around the pedicle of the growth. An intermittent electric current was passed through the platinum wire and within five minutes the pedicle was divided and the mass fell out of the mouth. Very little hemorrhage followed. The voice at once resumed its natural tone, and on examination the cords and larynx were found to be normal in appearance. The right half of the epiglottis and its accompanying growth had been removed. Very little pain or reaction followed the use of the cautery, and on the 5th of August the tracheal tube was removed and the opening closed. On the 8th, the patient was discharged from the hospital.



FIG. 3.
Syphilitic Neoplasm.

On the 15th of September, she visited the hospital again, but no trace of the neoplasm was apparent. The remaining half of the epiglottis had fallen over and partially occupied the place of the portion removed.

Her general nutrition was much improved and she had gained ten pounds in weight.

On examination the growth was found to weigh 360 grains and to be $4\frac{1}{2}$ inches in its greatest circumference and $3\frac{1}{8}$ inches in its lesser. A microscopic examination was very kindly made for me by Dr. E. K. Dunham of the Carnegie Laboratory, who reported that the growth was a sarcoma of the variety called by the Vienna school "perithelioma," and that the prognosis was rather more favorable than in most other varieties of sarcomata.

Although many authorities on laryngeal neoplasms believe that an expert should have little difficulty in making a diagnosis between syphilitic and malignant disease of the larynx, plates 3 and 4 of Cases Nos. 3 and 4, with their histories, illustrate the perplexities which may be experienced. The age of one of these patients favors malignant disease, while that of the other favors syphilis. Neither admitted any knowledge of a specific primary affection, and although each was given five drachms of potassium iodide daily for a week, neither showed any diminution in the size of the laryngeal growths. They



FIG. 4.

Epithelioma of the Larynx.

both complained of burning and stinging sensations in the larynx, and while one had chewed as much as an ounce of tobacco daily for fifty-four years, the other followed cigar wrapping as his employment, and has kept daily small pieces of tobacco in his mouth for many years. My colleagues who saw the cases, agreed that in location, size, shape, formation, and color, the neoplasms bore a remarkable resemblance to one another, and it was the general opinion that they were malignant in character. Both seemingly arose from the left ventricular band, which is probably the most frequent situation for the initial deposit of malignant neoplasms, and passed upwards

along the lateral walls of the pharynx to the posterior surface of the epiglottis into the left glosso-epiglottic fossa. After the administration of the first course of potassium iodide, a microscopic examination of a portion removed from the older man's throat proved the growth to be an epithelioma. No microscopic examination was made in the other case. Although bearing many appearances in common, these two cases were different in some important particulars and had characteristics representing their respective natures. The tissues surrounding the malignant neoplasms were very much irritated by an abundant secretion of thick mucus of the usual odor noticed in malignant cases; this was not apparent in the specific case. The notes of patient No. 3 are of further interest as showing that a later administration of exceptionally large doses of potassium iodide and mercury proved the neoplasm to be a syphilitic growth of a somewhat unusual character. The possible method of acquirement is also of interest in this case, as there is every reason to believe that the patient was truthful in denying any knowledge of syphilis. The complaints of a prolonged tonsillar disease, with the history of subsequent sore throat, is suggestive as to the possible point of infection. Tertiary syphilitic deposits of the larynx require more than a moderate dose of potassium iodide before its full benefit is obtained. An ounce or more of this salt in divided doses during the twenty-four hours may be needed. This, of course, necessitates great care, rest in bed, stimulants, hypodermic injections of strychnia, and occasionally hot packs. The resolution of a syphilitic neoplasm and infiltrations may be hastened by the application of a solution containing

Iodine.

Carbolic acid, \overline{aa} grs. 120.

Potass. iodid. grs. 10.

Spt. rect. 3 ii.

CASE 3. T. M. C., aged 37, worker in tobacco, came to the hospital October 10, 1894, complaining of difficult nasal respiration and a slight hoarseness and burning sensations in the throat. His father died at the age of 39 from pulmonary tuberculosis; his brother at the age of 30 from tuberculosis of

the throat, lungs, and intestines. The personal history of Mr. C. was excellent. With the exception of an occasional sore throat, he had been perfectly well until May, 1892, when he began to suffer from pain and soreness in the left tonsil accompanied by swelling of the anterior cervical glands. The tonsil increased in size until it became so large that it interfered with his breathing and taking nourishment and had to be removed. Owing to the apparent growth of the tonsil between the operations, it had to be excised three times. After the last operation considerable pain was experienced. A thick, yellow membrane formed on the tonsillar wound and remained two or three weeks; accompanied by high temperature and severe systemic disturbance. About a month after his recovery Mr. C. began to have a dry and burning sensation with some tickling on the left side of his throat near the root of the tongue, especially noticeable during deglutition. These sensations continued with varying intensity from June 9th to the latter part of August, 1894, when a slight hoarseness appeared, and rapidly increased until the tones were of a husky and rasping character. On examination, Mr. C.'s general condition was found to be good. The remaining portion of the left tonsil was hard and surrounded by considerable cicatricial tissue. The right ventricular band was thickened, and both cords were also somewhat red and thickened. The right cord moved freely but the movement of the left was somewhat impaired. The anterior two thirds of the left ventricular band was covered with a pale, yellow nodular mass, as shown in Figure 3. It passed upwards over the posterior surface of the epiglottis and into the left glosso-epiglottic fossa.

The margin of the neoplasm was distinct, and did not apparently infiltrate the surrounding tissues. The papillæ and follicles at the base of the tongue were considerably hypertrophied; otherwise, the upper respiratory tract seemed healthy. Potassium iodide was administered in increasing doses from October 15th to the 26th until five drachms a day were taken without any apparent diminution in the size of the growth. On the 31st of October, the potassium was renewed and continued until November 5th, when the dose of the salt had reached one ounce per day. The neoplasm then began to diminish in size. Complete rest was enjoined and the large dose of potash continued with the addition of ten drops of the tincture of *nux vomica* three times a day until the 14th, when the potassium was discontinued. The mass by this time had grown much smaller; the margins were more clearly defined and the pain and burning in the throat greatly lessened. Hydrarg. bichlorid. was then prescribed and continued until December 3d when the

potassium salt was again administered. The last course of potash with several applications of solid nitrate of silver and chromic acid completed the removal of the neoplasm and has left the larynx nearly normal in appearance. The patient is still under observation.

CASE 4. William M., aged 69, presented himself at the hospital on the 15th day of October, 1894, complaining of hoarseness and shortness of breath with difficult respiration and regurgitation of food. Family history negative. He had chewed tobacco for fifty-four years, but had enjoyed perfect health until eight months ago, when his throat began to feel sore, and a spasmodic cough, especially violent at night, soon followed. His physical condition was much impaired, and his loss in weight during the past three months had reached over thirty pounds. He spoke in a hoarse whisper, coughed continuously and expectorated quantities of a glairy, frothy, ill-smelling mucus. When he accidentally swallowed some tobacco juice, it caused severe pain and a paroxysm of coughing and strangulation. For some time past he could take only liquid nourishment, as an effort to take solid food resulted in severe choking, the food lodging near the root of the tongue.

Laryngoscopic examination showed the mucous membrane of the larynx to be very red and covered with mucus; the right cord slightly red and movable; and the left cord perfectly immovable, and owing to its infiltration by the neighboring neoplasm, it could not be distinguished. The left ventricular band was completely covered by a yellow, nodular-looking mass which passed upwards along the laryngeal surface of the epiglottis nearly to its tip, and then into the left glosso-epiglottic fossa. The surrounding tissues were considerably infiltrated, and the anterior cervical glands somewhat enlarged and tender. He complained of pain running up to the left ear and down the anterior portion of the sterno-mastoid muscle.

On his next visit to the hospital, Oct. 21st, Mr. M. reported that his breathing had been much better for the three previous days without any apparent reason. He was admitted to the hospital and given potassium iodide until the 31st, when the daily dose had risen to 5 drachms without any diminution in the size of the growth; on the contrary, it seemed much more irritable, and several alarming suffocative attacks had occurred during the night.

A small piece of the growth was removed for examination, and proved to be an epithelioma. Tracheotomy was decided upon, and a low operation performed with cocaine as an anæsthetic. It proved very satisfactory in relieving the pain and discomfort

of the operation. He rallied well from the operation and experienced considerable relief. Twenty-four hours later the nurse noticed that there was no respiration through the tube, and an examination showed that the surrounding tissues had become so infiltrated from the traumatic inflammation following the operation, that they had gradually lifted the tube out, and in front of the trachea. The tracheal wound was covered with a yellow, organized, fibrinous tissue which infiltrated the surrounding parts for some distance. Considerable difficulty was experienced in finding the original opening in the trachea and in reintroducing the tube. Although a longer tube was substituted, it was found in a few days that it also was being lifted out of the trachea. This early discovery prevented the formation of the fibrinous exudation which had previously taken place, and no difficulty was experienced in finding the tracheal wound the second time. A specially long tube was now made and after its introduction no further trouble was experienced. The cough and all the distressing symptoms were ameliorated and a condition of comparative comfort resulted.

On the 21st of November, considerable pain in the left side of the neck was experienced, especially severe on swallowing. This was found to result from an infiltration and contraction of the anterior belly of the stylo-hyoid muscle. Laryngoscopic examination showed that the surface of the neoplasm was ulcerating near the tip of the epiglottis and that infiltration was spreading laterally, and up the side of the pharynx. Liquid nourishment was taken without much discomfort, and after a time the muscular tenderness abated; and as there was no occasion for a longer stay in the hospital, he was sent home on the 30th of November.

He has been heard from several times during the past month and the reports are of easy respiration and deglutition, with a general condition of comparative comfort.

The next case, represented in Figure 5, has several interesting features. The history, appearance, location, and many of the symptoms of this neoplasm bore a strong resemblance to those of a papilloma of the vocal cords, but on removal the tumor proved to be a hard, fasciculated fibroma. It is difficult to account for the pain experienced by this patient, as it was unusually severe and out of all proportion to the size of the growth.

CASE 5. Lena M., aged 35, came to the hospital Octo-

ber 29th, complaining of severe pain in the left side of her throat, especially when she swallowed. Family history negative. Personal history good until one year ago, when after talking considerably she became hoarse. This condition gradually increased until the present time, when she is able to speak only in a hoarse whisper. Two weeks before her visit to the hospital she began to have pain in the left side of the larynx, which soon became especially severe on swallowing and at night. An itchy, scratchy feeling caused considerable irritation of the throat. A laryngoscopic examination showed the right cord to be normal. On the left cord, at the junction of the anterior and middle third, a small round mass was visible,



FIG. 5.

Fibroma of the Vocal Cord.

seemingly growing from the free margin of the cord, and during ordinary respiration standing out in the rima glottidis, as shown in Fig. 5. When the cords were approximated, the neoplasm turned upwards on the superior surface of the left cord. Several vascular points were visible over the surface of the growth even after the application of cocaine. The rest of the larynx and upper respiratory tract was normal in appearance. At subsequent visits on October 31st, November 5th and 7th, the patient's chief anxiety was to be relieved of the severe pain which she said was increasing rapidly. A 20% solution of cocaine was applied to the larynx on November 7th, and the growth removed by Mackenzie's antero-posterior laryngeal forceps. There was considerable hemorrhage from the point of the attachment of the growth to the cord, and during the evening following the operation the patient became completely aphonic. The next morning the voice was almost

normal in character and the pains and scratchy sensations in the throat had disappeared. The latter returned after a few days, but were soon stopped by a spray of 20-grain solution of chloride of zinc. When the patient last visited the hospital, November 30th, it was difficult to tell which vocal cord had been the seat of the growth. The vocal sounds were natural, and there were no abnormal sensations in the larynx.

The remarkable tolerance which may be established in the larynx and oro-pharynx when the encroachment is slow and unaccompanied by pain, is well illustrated in a résumé of some of these cases. Of course, much depends on the size, shape, and situation of a neoplasm. If the initial development implicates the cords, ventricular bands, or either commissure on a plane with the cords, the voice is at once impaired from their fixation or prevention of coaptation. If the anterior commissure is implicated, the smallest growth may give early evidence of its presence; on the other hand, the upper part of the inter-arytenoid space and the arytenoid cartilages will tolerate neoplasms of considerable size. One of the patients recently at the clinic had several large condylomata in the superior part of the inter-arytenoid space, without producing any change in the vocal sound or respiration; they were discovered during a routine examination, when the patient visited the hospital for some nasal difficulty. Extrinsic parts of the larynx are more tolerant, especially if the growth begins in the upper part of the epiglottis. The tolerance to these large and numerous growths does not make them less dangerous, as an attack of indigestion, cold, fear, excitement, etc., may result in an attack of suffocation which may prove fatal before medical aid can be obtained. The favorable result obtained by the tracheotomy performed in Case 1 was most gratifying, and in cases of congenital papillomata, attacked with membranous or catarrhal laryngitis, this method gives immediate and permanent benefit.

In laryngeal papillomata in children, if the symptoms are not urgent, considerable success may be expected from endolaryngeal treatment. The chief difficulty arises from the violent struggles of the child and the quantity of mucus in the throat. I have adopted a method in three children, aged respectively 2 years, 3 years, and 3½ years, which has enabled

me to remove the papillomatous masses with comparatively little trouble. The day before the operation, belladonna is given in small doses and increased until dilatation of the pupils and dryness of the throat are produced. An hour before the operation some preparation of opium, such as paregoric or Dover's powder, is administered until the patient is well under its influence. The resulting condition is more satisfactory for these operations than ether or chloroform anæsthesia, as complete muscular relaxation is not produced, but just sufficient resistance remains to make it an easy matter to hold the child in the upright position. This is done by one assistant, who places the child in O'Dwyer's position for intubation, and holds out the tongue. A second assistant steadies the head and holds the gag. An application of 2 per cent. solution of cocaine is then made, and the child is ready for the introduction of the laryngeal mirror and forceps. There is little difficulty in obtaining a good view of the larynx, as the child is quite passive, and owing to the dryness produced by the belladonna the view will not be obstructed by mucus. The papillomata may readily be grasped and removed in the usual way. Recurrence of papillomata after treatment by the endolaryngeal method is also frequent, as it is after their treatment by thyrotomy, and occasionally after tracheotomy. If once removed, the papillomata are usually several months in recurring, and the older the child, the easier it is to carry out the endolaryngeal treatment. If tracheotomy is performed, months pass before a favorable termination is reached, and, moreover, it is not always successful. Added to this, there is an element of danger in opening the wind-pipe, and the disfigurement of the neck is also of great moment in some cases. All things considered, it seems that every effort should be made to employ the endolaryngeal method for children; it is safer, the voice is always left in better condition, and it does not disfigure. Tracheotomy may be used to relieve the acute symptoms which occasionally occur in cases of neglected papillomata and in the laryngitis resulting from exanthemata.

It would seem better to defer thyrotomy in these cases until the other methods at our disposal have been tried.

A CASE OF MULTIPLE PAPILLOMA OF THE LARYNX.

J. W. CASSELL, M.D.

Mrs. A. D——, a native of Italy, aged 33 years, first came to the Manhattan Eye and Ear Hospital on October 2, 1894, complaining of severe dyspnœa, and giving the following history:

She had enjoyed perfect health up to about eighteen months ago, at which time *hoarseness* first became noticeable. The hoarseness gradually increased, until at the time of her first visit to the hospital she had almost complete *aphonia*. She had no *cough* until last June, about thirteen months after the first symptoms of dysphonia, and it was never troublesome, being of a short, hacking kind, not attended with any expectoration. Accompanying the cough, however, *dyspnœa* began to be experienced, and progressively increased, until at the time of her first visit she complained of "suffocative attacks," which would cause her to become very much *cyanosed*. These attacks were the cause of much dread on her part. The patient was quite emaciated, had been steadily losing flesh, and complained of anorexia. She gave no specific history. Her associates, however, were a nervous, emotional class, given to sudden outbursts of passion, when they would scream at the highest pitch, and it seemed possible that this "straining" of the voice may have been an exciting cause of the growth.

Upon examination, the larynx was found pretty well filled with a mulberry-like growth, of a whitish-gray color, which entirely concealed both cords, and which seemed to spring from both sides of the larynx, although the greater portion was from the left side, and meeting in the middle, it left only a small chink posteriorly, corresponding to the inter-arytenoid commissure, through which she could breathe. A portion of the growth was removed and submitted to Dr. H. B. Douglass, pathologist of the hospital, who reported it to be a papilloma. The growth was then attacked with the Mackenzie laryngeal cutting forceps, and as much removed as the tolerance of the patient would allow at each sitting. Sometimes there would be enough removed to fill a thimble two thirds

full, and again there would be a piece not larger than a pea. The hemorrhage was very slight. As the removal progressed, the broad attachment of the growth along the upper surface of both cords became apparent, and as the upper portion was removed, increasing quantities of the growth which had been crowded into the ventricles came into view. A second specimen was submitted to Dr. Douglass, who again reported it to be papilloma, and its removal was continued. At the commencement of treatment an examination was made of her chest, but no tubercular or other lesion was found in her lungs. The patient's physical condition began to show marked improvement, as manifested in her increasing appetite, the disappearance of her cachectic look, and a gain in weight, as soon as enough of the growth had been removed to relieve her dyspnœa. This improvement has continued, and although at the time of making this report a small amount of the growth yet remains to be removed, we can safely say that her ultimate recovery is a matter of but a very short space of time.

This case is of interest on account of the extent of the growth (the amount removed being sufficient to almost fill a half-ounce vial), and in the fact that no lesion in her lungs existed, although her cachectic appearance and the possible association of papilloma of the larynx and pulmonary tuberculosis led us to look for the latter condition in this patient.

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FIG. 1.



FIG. 2.

REPORT OF A CASE OF STRETCHING OF SEVENTH
NERVE FOR RELIEF OF FACIAL OR
MIMIC SPASM.

J. F. TERRIBERRY, M.D.

I AM indebted to Dr. A. E. Adams for the following case,
referred to my clinic March 17, 1892, with this statement,
in substance :

C. E. H. consulted me May 31, 1889, for relief from severe
spasmodic contractions of the muscles of left side of his face.
He stated that not infrequently the left eye would be closed
for several seconds at a time, the cheek being lifted and the
mouth pulled well to the left. Examination of his eyes re-
vealed :

R. V. $\frac{1}{8}$.

L. V. $\frac{1}{8}$. W. +.75 D. C. Ax. 90 \ominus -.75 D. C. Ax. 180 = $\frac{1}{8}$.

June 4th.—Examined with same results as before ; above
glasses ordered.

November 20th.—Has worn glasses with almost complete re-
lief from spasm until the last few days ; glasses changed to :

R. Plain glass.

L. + 1.25 D. C. Ax. 90 \ominus -.75 D. S.

June 14th, '90.—Spasm gradually growing worse ; return to
glasses first ordered.

July 16th.—Spasm about as severe as at time of first visit.

October 18th.—Left hypophoria discovered and corrected
with prisms.

February 9th, '92.—Condition unchanged since last visit.

May 4th.—No improvement in his condition ; was ordered
a ground glass for left eye ; reports later no relief from this.
Case referred.

H. is 39 years of age, an American, married, and a gravel
roofer by occupation.

His father died of senile gangrene ; his mother, of hemiplegia ; no inherited taints discovered in the family.

In appearance he is robust and vigorous, both physically and mentally, says his health has always been exceptionally good ; was never injured ; denies venereal disease, and no evidence of same ; is free from rheumatic taint, but was a liberal user of alcoholic stimulants and tobacco up to the time of inception of present trouble, about nine years ago.

At this time slight twitching was noted about the left eye, slowly this became more frequent and decided, extended to the cheek, and in a few months to the entire left side of face, including muscles of forehead—well shown in the accompanying photograph.

The past few years, four or five, his condition has changed little if any, the spasms being very marked and recurring at short intervals, the longest not greater than an hour or two, and his wife says they continue during sleep, but are less frequent ; talking, eating, and excitement aggravate his trouble, as is usual in these cases.

Examination failed to find any organic trouble, either central or peripheral, in the course of the seventh nerve.

Decided obstruction to the passage of air through the left nostril was found ; other sources of irritation that might act reflexly to cause or continue his condition were not detected, further than the errors of vision before mentioned.

Patient was referred to Dr. C. H. Knight, who reported obstruction to breathing to be due to exostosis growing from septum and impinging upon inferior turbinated body.

Removal of this growth was followed by almost, if not quite, entire relief from spasm for about ten days, when it returned rapidly to its former severity.

It seemed apparent that little could be expected from the use of drugs, in view of his excellent physical and mental condition ; he was, however, put upon mineral acids with nux, and the various antispasmodics were tried without benefit.

The operation of stretching the facial nerve was proposed and readily consented to, patient stating his willingness to undertake any procedure that offered even a remote hope of relief.

January 5, 1893, patient was etherized and the nerve stretched after method described by Baum, in which incision is made behind the ear.

In this case the nerve was found more than one inch below the surface, it was caught with a blunt hook and thoroughly stretched by a force estimated roughly at from six to seven pounds. Southam and Keen used four to five pounds and

Gray from six to seven pounds. I agree with Putnam that the patient should recover partially from the anæsthesia before stretching the nerve, in order that we may be able to judge of the effects of the traction upon the nerve, or the face movements. The wound was dressed twice and quite healed in six days.

Result: Immediate complete paralysis of muscles of left side of face, the hearing, taste, and palate muscles not affected, showing the effects of traction to be felt peripherally only.

Electrical examination upon recovery from anæsthetic, immediately, gave the following results:

With strong Faradic current slight contraction in the orbicularis palp. and corrugator, the electrode being upon the nerve. No reaction when applied to muscles; the remaining muscles of the face fail to respond to this current with electrode applied to the nerve or upon the muscle.

With galvanism, slight response, normal in quality, in the above-named muscles, electrode applied to nerve; no response with electrode applied to these muscles; the remaining muscles of this side fail to respond to this current applied directly or through the nerve.

February 28th.—Fifty-four days after operation. No return of spasm; slight voluntary action in orb. palp., risorius, muscles of lower lip, and very slight in elevators of the angle of the mouth.

Electrical Examination.—The Faradic current fails to cause contractions in any of the muscles, applied directly or to the nerve.

With galvanism: slight reaction in above-named muscles, electrode applied directly or through nerve. Contractions somewhat tardy, but C. C. C. exceeds A. C. C. A slight area of anæsthesia, with loss of pain and temperature perceptions, in lower portion of ear—mainly in front—is spoken of at this visit. Gowers mentions having observed this in several cases of Bell's palsy.

March 23d.—Voluntary power returning rapidly in face muscles.

Faradic current elicits slight response in muscles of lower lip only, applied directly or through the nerve.

With galvanism: the lower lip muscles respond actively to nerve or muscle stimulation; no qualitative alterations. A very strong current elicits a response, applied directly or through the nerve, in all the remaining face muscles. Some tardiness in contraction; but C. C. C. exceeds A. C. C.

No return of tic.

April 13th.—Voluntary power nearly perfect in face muscles;

sensation improving in anæsthetic patch noted above. No return of spasm.

April 29th.—No return of tic.

May 9th.—Patient thinks face movements are perfect, with the exception of forehead elevation.

No return of tic.

June 6th.—Occipito-frontalis still a trifle weak.

Electrical Examination.—Faradic excitability returning in the nerve, the muscles of lower lip only responding to direct stimulation.

With galvanism: The occip. front. and orb. palp. react tardily to muscle application of electrode. A. C. C. exceeds slightly C. C. C. The remaining muscles are a trifle tardy in responding, but C. C. C. exceeds A. C. C.

Feeling almost normal in area noted as anæsthetic.

No return of spasm.

November 19th.—Voluntary control of occip. frontalis perfect; face action now quite normal. Anæsthetic area noted on pinna has recovered.

No return of spasm. Condition well shown in accompanying photograph.

December 23d.—About November 20th he noticed a slight "drawing feeling" about the left eye; has had almost daily returns of this since that time. About December 1st slight twitching was noted at corner of his mouth. The time elapsed since the nerve was stretched—January 5th—to the first return of spasm, is three hundred and twenty days.

Jan. 25th, 1894.—Spasm has increased but little since last report.

April 17th.—There has been a steady return of the spasm since last seen, occurring at shorter intervals, and being more decided.

I ordered atropia sulph. grains $\frac{1}{100}$ three times a day.

May 10th.—Spasms have been much less severe since atropia was ordered, and thinks they are about half as frequent.

June 15th.—Little, if any, perceptible change in his condition. Atropia increased to grains $\frac{1}{50}$.

July 5th.—No change. Atropia increased to grains $\frac{1}{25}$. Spasms have not been noted to occur at night since the operation.

July 31st.—Spasms less frequent and severe. Atropia increased to grains $\frac{1}{15}$.

August 28th.—No change since last seen. Atropia increased to grains $\frac{1}{10}$.

February 21, 1895.—Atropia was continued until two months ago, one-sixtieth of a grain having been taken three times a

day for about four months. Patient estimates the spasms to occur about one half as frequent as before the operation ; they are much shorter and much less severe.

This operation was performed for the first time by Billroth and Nussbaum, in 1872.

The paralysis following the operation has not been permanent in any case reported that has come to my notice.

The effects of traction upon the nerve are limited to its peripheral distribution.

I have found records of twenty-one cases of stretching of this nerve for mimic spasm, the case here reported adding one to this number ; the results ranging from relief for less than one week to between four and five years. Improvement has followed in a number of the cases reported—about one half.

Some writers speak of this operation as a curative one. Only one of these twenty-two cases was well at the expiration of the fifth year. This one may warrant us in using the term, but palliative, certainly, seems more appropriate at the present time.

The question naturally arises : Is this operation a justifiable one in view of the results obtained in the twenty-two cases, briefly summed up here.

The relief afforded H. was for a longer time than the average of the twenty-one cases mentioned. But I think the testimony given by him can be considered as an average one, and a more competent answer to the question than can be furnished by myself at least.

When last seen, in reply to my question as to how he felt as to the results of the procedure undertaken for his relief, he replied in substance : "I am glad it was done, and were it not for the anæsthetic, I should ask you to repeat it, and may do so still. I am certainly very much improved."

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*Appointed Nov. 20, 1894.

TWENTY-FIFTH ANNUAL REPORT OF THE BOARD OF SURGEONS TO THE BOARD OF DIRECTORS.

GENTLEMEN :

The Surgeons respectfully report that during the year ending September 30, 1894, the number of new patients received at the Hospital was 16,893.

Total number since Hospital was opened, 177,898.

	12 Mos. ending Sept. 30, 1894.
Total number of new patients registered.....	16,893
Number of new patients in the Eye department.....	11,201
Number of new patients in the Ear department.....	2,740
Number of new patients in the Throat department.....	2,521
Number of new patients in the Nerve department.....	422
<hr/>	
Total number of visits made by patients.....	73,178
Number of visits to Eye department.....	41,905
Number of visits to Ear department.....	12,897
Number of visits to Throat department.....	15,525
Number of visits to Nerve department.....	2,851
Daily average attendance.....	239
<hr/>	
Number of boarding patients.....	679
Number of boarding patients, <i>free</i>	311
Number of days board to patients.....	14,989
Number of days of gratuitous board.....	8,657
<hr/>	
Patients refused treatment on account of ability to pay.....	771
Number of children treated under nine years of age.....	2,253
Number of prescriptions dispensed, Drug dept., paid 16,686, free 2,256, total...	18,942
Number of prescriptions dispensed, Optical dept., paid 3,527, free 322, total...	3,849
Roman Catholics.....	9,054
Protestants.....	6,317
Hebrews.....	1,461
Unknown.....	61

NATIVITIES.

United States.....	10,415	Denmark.....	23	South America....	4
Ireland.....	3,093	Wales.....	18	Mexico.....	1
Germany.....	1,135	Norway.....	24	New Brunswick....	5
England.....	631	West Indies.....	49	Turkey.....	16
Scotland.....	207	Spain.....	9	Newfoundland.....	9
Canada.....	117	Australia.....	1	Persia.....	4
Italy.....	209	Nova Scotia.....	16	Africa.....	3
Sweden.....	146	Hungary.....	73	Greece.....	1
France.....	95	Bohemia.....	20	Armenia.....	9
Russia.....	330	Belgium.....	3	Bavaria.....	2
Japan.....	4	Asia.....	3	East India.....	2
Austria.....	135	Holland.....	18		
Switzerland.....	48	Roumania.....	15		

SUMMARY OF OUTDOOR PATIENTS AT HOSPITAL.

Month ending October 31, 1893....	6,011	Month ending April 30, 1894....	6,935
" " November 30, "....	5,431	" " May 31, "....	6,844
" " December 31, "....	4,635	" " June 30, "....	6,757
" " January 31, 1894....	5,752	" " July 31, "....	6,118
" " February 28, "....	5,227	" " August 31, "....	6,668
" " March 31, "....	6,792	" " September 30, "....	6,008

REPORT OF DISEASES OF EYE TREATED DURING YEAR.

AFFECTIONS OF THE CONJUNCTIVA.

Angioma.....	1	Cyst of Conjunctiva.....	6
Burn of Conjunctiva.....	11	Ecchymosis.....	40
Chemosis of Conjunctiva.....	8	Foreign Body.....	75
Conjunctivitis, Acute.....	896	Lime Burn of Conjunctiva.....	24
" " Bleorrhoeal.....	11	Edema of ".....	2
" " Chronic Catarrhal.....	411	Pinguecula.....	10
" " Follicular.....	57	Polypus of Conjunctiva.....	6
" " Gonorrhoeal.....	15	Pterygium.....	31
" " Hemorrhagic.....	25	Symblepharon.....	7
" " Lachrymal.....	9	Trachoma.....	574
" " Membranous.....	8	" " with Pannus.....	64
" " Neonatorum.....	70	Tumor of Conjunctiva.....	4
" " Phlyctenular.....	162	Wound of ".....	8
" " Purulent.....	72	Xerophthalmus.....	2
" " Pustular.....	32		
" " Traumatic.....	93		2,737
" " Ulcerative.....	3		

AFFECTIONS OF THE CORNEA.

Abrasion.....	16	Keratitis Serpens.....	4
Abscess.....	8	" " Suppurative.....	11
Burn.....	24	" " Traumatic.....	69
Cystoid Cicatrix.....	2	" " Ulcerative.....	282
Foreign Body.....	378	" " Vascular.....	36
Herpes.....	1	Kerato-Conus.....	7
Hypæmia.....	11	" " Hypopyon.....	20
Keratitis.....	129	" " Iritis.....	59
" " Dendritic.....	2	Leucoma, Simple, Adherent, and	
" " Diffuse.....	3	Total.....	58
" " Fascicular.....	4	Opacities.....	223
" " Interstitial.....	43	Staphyloma.....	32
" " Marginal.....	41	Wound.....	31
" " Phlyctenular.....	146		1,657
" " Punctate.....	6		

AFFECTIONS OF IRIS.

Coloboma of Iris.....	14	Iritis, Traumatic.....	14
" " and Choroid.....	0	Mydriasis.....	14
Irido-Choroiditis.....	13	Myosis.....	6
" " Cyclitis.....	17	Occlusion of pupil.....	9
" " Cyclo-Choroiditis.....	4	Persistent Pupillary Membrane....	2
" " Dialysis.....	6	Prolapse.....	10
" " Donesis.....	5	Synechia, Anterior.....	22
Iritis.....	141	" " Posterior.....	19
" " Rheumatic.....	8	Wound.....	5
" " Serous.....	5		346
" " Syphilitic.....	32		

AFFECTIONS OF THE LENS.

Aphakia.....	42	Cataract, Polar, Anterior and Pos-	
Cataract, Congenital.....	16	terior.....	11
" Diabetic.....	1	" Senile.....	228
" Incipient.....	59	" Traumatic.....	48
" Lamellar, or Zonular....	5	Dislocation.....	22
" Membranous.....	10	Opacities.....	15
" Nuclear.....	1		456

AFFECTIONS OF CILIARY BODY AND CHOROID.

Atrophy of Choroid.....	6	Glaucoma, Chronic.....	15
Choroiditis.....	42	" Hemorrhagic.....	3
" Disseminata.....	1	Glio Sarcoma.....	2
" Sclerotic-Posterior....	3	Melano Sarcoma of Choroid....	1
Cyclitis.....	6	Rupture of Choroid.....	1
Glaucoma.....	40	Wound Ciliary Region.....	5
" Absolute.....	6		
" Acute.....	2		133

AFFECTIONS OF SCLERA.

Episcleritis.....	44	Wound.....	4
Foreign Body in Sclera.....	1		
Sclero Keratitis.....	5		54
			"

AFFECTIONS OF VITREOUS.

Foreign Body in Vitreous.....	11	Opacities.....	10
Hemorrhage.....	7		
Hyalitis.....	6		36
Muscae Volitantes.....	2		

AFFECTIONS OF GLOBE.

Albinism.....	5	Rupture of the Globe.....	8
Anophthalmus.....	34	Staphyloma.....	6
Buphthalmus.....	3	Sympathetic Ophthalmia.....	7
Exophthalmus.....	7	Wound.....	23
Panophthalmitis.....	9		
Phthisis Bulbi.....	37		139

AFFECTIONS OF MUSCLES AND NERVES.

Insufficiency of External Recti....	8	Paralysis of Inferior Oblique.....	6
" Internal ".....	5	" Internal Rectus.....	5
Irido-plegia.....	1	" Superior ".....	6
Nystagmus.....	10	Paresis External Rectus.....	17
Paralysis of Accommodation.....	4	" Internal ".....	9
" 3d Nerve.....	15	Ptoxis.....	24
" Ciliary Branch of 3d		Strabismus Convergents.....	356
Nerve.....	7	" Divergens.....	44
" 4th Nerve.....	2	" Periodic.....	50
" 6th ".....	10		
" 7th ".....	11		584

ANOMALIES OF REFRACTION AND ACCOMMODATION.

Anisometropia.....	40	Astigmatism, Myopic Compound ..	68
Asthenopia.....	65	Hypermetropia.....	1,092
Astigmatism, Hyperopic.....	889	" with Presbyopia.....	284
" Compound.....	198	Myopia.....	407
" Irregular.....	7	Presbyopia.....	533
" Mixed.....	83		
" Myopic.....	175		3,841

AFFECTIONS OF ORBIT.

Abscess.....	1	Periostitis.....	1
Blennorrhoea.....	1	Sarcoma.....	0
Carcinoma.....	3	Tumor.....	2
Cellulitis of Orbit.....	9	Wound.....	4
Cyst.....	3		
Necrosis.....	2		29
Osteoma.....	3		

AFFECTIONS OF OPTIC NERVE AND RETINA.

Amaurosis from Locomotor Ataxia.....	1	Hemianopsia.....	3
Amblyopia.....	8	Neuritis.....	16
" Ex-abusu.....	19	Neuro-Retinitis.....	18
" Hysterical.....	3	" Albuminuric.....	8
Amyloid Degeneration of Optic Nerve.....	2	" Hemorrhagic.....	3
Atrophy of Optic Nerve.....	73	Opaque Optic Nerve Fibres.....	5
Coloboma of Retina.....	1	Retinitis.....	19
Detachment of Retina.....	31	" Hemorrhagic.....	8
Embolism of Central Retinal Artery.....	4	" Nephritic.....	5
Glioma of Retina.....	3	" Pigmentosa.....	6
Gumma of Optic Nerve.....	1	Retino Choroiditis.....	12
Hemeralopia.....	2		251

AFFECTIONS OF LACHRYMAL APPARATUS.

Dacryocystitis.....	96	Mucocoele of Lachrymal Sac.....	6
Lachrymal Abscess.....	13	Necrosis of " Bone.....	2
" Catarrh.....	48	Stricture of " Canal.....	19
" Fistula.....	2		
Misplaced Punctum.....	3		189

AFFECTIONS OF LIDS.

Abscess.....	21	Foreign Body in Lid.....	19
Blepharitis Marginalis.....	330	Hæmatoma.....	3
Blepharospasm.....	12	Herpes.....	1
Burn.....	10	Hordeolum.....	73
Cellulitis of Lid.....	1	Molluscum Contagiosum.....	3
Chalazion.....	183	Œdema.....	11
Cicatricial Contraction.....	2	Phthiriasis Ciliarum.....	2
Cystic Tumor.....	18	Trichiasis.....	20
Ecchymosis.....	13	Tumor.....	5
Ectropion.....	8	Ulcer.....	2
Eczema.....	9	Verruca.....	7
Emphysema.....	2	Wound.....	13
Entropion.....	16		
Epicanthus.....	4		792
Epithelioma.....	4		

UNCLASSIFIED.

Abcess of Brow.....	3	Tumor of Brow.....	2
" Frontal Sinus.....	1	Tumor over Frontal Sinus.....	1
Facial Erysipelas.....	2	Unrecorded.....	189
" Neuralgia.....	6	Wound of Brow.....	2
" Paralysis.....	1	" Face.....	2
Fistula of Frontal Sinus.....	1	" Scalp.....	2
Graves' Disease.....	1		
Improper Cases.....	26		240
Ocular Vertigo.....	1		

OPERATIONS ON THE EYE.

Advancement of External Rectus..	3	Enucleation for Sympathetic Oph-	
" Internal.....	3	thalmia.....	5
Agnew's Hook Operation for Mem-		Excision of Granulation on Con-	
branous Cataract.....	2	junctiva after Tenotomy.....	2
Bowman's Operation for Dacryo-		Excision of Granulation on Cornea	0
cystitis.....	49	" Polypi from Lid.....	1
Bowman's Operation for Stenosis		" Prolapsed Iris.....	5
of Lachrymal Canal.....	10	" Section of Cornea	
Cantholysis for Ectropion.....	1	Sloughing.....	0
" Entropion.....	2	Evisceration for Panophthalmitis..	1
" Trachoma.....	26	Expression of Trachoma.....	56
" " and Pan-		Grattage.....	6
nus.....	5	Incision, Abscess.....	5
" Ulcerative Keratitis	5	" of Lid.....	8
Canthotomy for.....	6	" " Lachrymal Sac	6
Cataract Extraction, after Prelimi-		Gland.....	0
nary Iridectomy.....	4	" Chalazion.....	75
Cataract Extraction, after Prelimi-		" Cystic Tumor, Scalp.....	1
nary Iridectomy, Försters.....	3	" Hordeolum.....	8
Cataract Extraction, for Luxated		" Cellulitis, Lid.....	0
Lens.....	6	" Staphyloma of Cornea....	4
Cataract Extraction for Modified		Iridectomy for Artificial Pupil....	5
Graefe.....	2	" Traumatic Cataract	3
Cataract Extraction, Simple.....	106	" Glaucoma, Acute....	17
(Traumatic).....	4	" Chronic.....	2
Cauterization, Abscess of Cornea...	2	" Interstitial Keratitis	8
" Corneal Ulcer.....	46	" Leucoma Adherens.....	2
" Keratitis Dendritica	1	" Occluded Pupil.....	19
" Prolapsed Iris.....	6	" Opacity of Cornea....	5
" Pterygium.....	1	" Prolapsed Iris.....	7
Critchett's Operation for Anterior		" Serous Iritis.....	4
Staphyloma.....	11	" Staphyloma of Cor-	
Curetting the Cornea for Keratitis		nea.....	5
Dendritica.....	2	" Preliminary to Cataract	
Enucleation for Buphthalmus.....	1	Extraction.....	6
" Foreign Body in		Keratonyxis for Congenital Cataract	19
Globe.....	5	" Membranous Cata-	
" Glaucoma Absolu-		ract.....	61
tum.....	3	" Soft Cataract.....	5
" Glio-Sarcoma.....	1	" Traumatic Cataract	35
" Irido-Choroiditis..	1	Paracentesis for Glaucoma.....	2
" Cyclitis.....	2	" Keratitis Dendritica	0
" Melano-Sarcoma of		" " Ulcerative	4
Choroid.....	1	" Kerato-Globus.....	0
" Panophthalmitis...	5	" Hypopyon.....	19
" Phthisis Bulbi.....	20	" Iritis.....	2
" Rupture of Globe	22	" Staphyloma.....	1
" Staphyloma of Cor-		" and Massage for Im-	
nea.....	4	mature Cataract..	2

Plastic for Deformed Punctum.....	1	Removal of Granulations from Orbit ..	2
" " Symblepharon	7	" " " " Conj.	1
" " Wound	5	" " Papilloma	2
" " Ectropion	17	" " Pterygium	20
" " Entropion	27	" " Tumor of Lid.....	8
" " Trichiasis.....	1	" " " " Orbit.....	2
" " Epicanthus	2	" " Verruca	3
" " Ptosis	6	Replacing Iris.....	1
Removal of Cyst of Lid	8	Sclerotomy for Glaucoma Chronic	
" " Cystic Tumor, Brow....	5	" " " " and Secondary	5
" " " " from Conj.	3	Sclerotomy for Detached Retina ...	1
" " Epithelioma	1	" " " " Ant. Staphyloma...	1
" " Foreign Body from Anterior Chamber	2	Tattooing for Leucoma of Cornea...	1
" " Foreign Body in Brow	1	Tenotomy for Convergent Strabismus.....	128
" " " " on Conj.	47	" " " " mus.....	
" " " " on Cornea	337	Tenotomy for Divergent Strabismus and Advancement	29
" " " " on Lid....	4		
" " " " Sclera....	2		
" " " " from Vitreous with Magnet	3		1,470

DISEASES OF THE EAR.

AFFECTIONS OF AURICLE AND EXTERNAL EAR.

Abscess	8	Furuncle.....	38
Aspergillus	4	Hæmatoma	1
Cerumen, Impacted	376	Inflammation, Acute, Diffuse.....	47
Cyst of Auricle.....	4	" " " " Traumatic ..	2
Cystic Tumor behind Auricle	2	Paralysis Sixth Nerve	3
Deformed Auricle.....	3	Polypi.....	14
Eczema	81	Wound of Auditory Canal.....	2
Exostosis of Auditory Canal.....	8	" " " " Auricle.....	2
Fistula of Auricle	2		
Foreign Body	16		613

AFFECTIONS OF MIDDLE EAR.

Adhesive Inflammation.....	17	Otitis Media Suppurativa Acuta...	302
Foreign Body in Tympanum.....	3	" " " " Chronica	409
Otalgia.....	54	" " " " Subacuta	30
Otitis Media Catarrhalis Acuta....	171	Wound of Membrana Tympani....	6
" " " " Chronica..	710		
" " " " Subacuta.	74		1,776

AFFECTIONS OF MASTOID.

Abscess.....	2	Periostitis.....	24
Mastoiditis.....	35		
Mastoid Fistula.....	1		62

INTERNAL EAR.

Disease of Acoustic Nerves.....	70	Deaf-Mutism	15
" " Internal Ear.....	52	Rupture of Membrana Tympani...	1
Injury of Middle Ear and Internal Ear.....	4		142

UNCLASSIFIED.

Adenitis Cervical.....	6	Presbykousis.....	8
Improper Cases.....	6	Rhinitis, Chronic Hypertrophic....	5
Necrosis of Antrum.....	1	" Acute.....	1
Parotitis.....	2	Tonsillitis, Follicular.....	2
Pharyngitis, Acute.....	3	Unrecorded.....	305
" Chronic.....	4		
Post-Auricular Adenitis.....	2		345

EAR OPERATIONS.

Curetting Adenoids of Pharynx....	59	Opening of Mastoid Cells.....	14
" Granulations of Tympanum.....	8	Paracentesis for Otitis Media Catarrhalis Acuta.....	15
" Mastoid Sinus.....	3	Paracentesis for Otitis Media Catarrhalis Chronica.....	6
" Necrosed Ossicles.....	1	Plastic for Deformed Auricle.....	3
Excision of Membrana Tympani for Otitis Media Catarrhalis Chronica.....	3	Removal of Foreign Body.....	11
Excision of Tonsils.....	7	" Granulations in Auditory Canal.....	5
Incision for Abscess.....	7	" " Malleus.....	3
" Furuncles and Tumors.....	13	" " Lymphatic Gland.....	5
" Occluded Meatus.....	1	" " Necrosed Bone in Mastoid.....	7
" of Canal for Otitis Externa.....	9	" " Ossicles.....	6
" Wilde's for Mastoid Perio- stitis.....	15	" " Polypus.....	34
			236

RECAPITULATION.

DISEASES OF THE EYE.

Ciliary Body and Choroid.....	133	Optic Nerves and Retina.....	251
Conjunctiva.....	2,737	Orbit.....	29
Cornea.....	1,657	Refraction and Accommodation....	3,841
Globe.....	139	Sclera.....	54
Iris.....	346	Vitreous.....	36
Lachrymal Apparatus.....	189	Unclassified.....	240
Lens.....	458		
Lids.....	792		11,486
Muscles and Nerves.....	584		

OPERATIONS ON THE EYE.

Advancements.....	6	Grattage for Granular Conjunctivitis	6
Agnew's Operation for Membranous Cataract.....	2	Iridectomies.....	83
Bowman's, Stilling's.....	59	Keratonyxes.....	120
Cantholyses.....	38	Paracenteses.....	30
Canthotomies.....	6	Plastic Operations.....	66
Cataract.....	125	Removal of Tumors, Foreign Bodies, etc.....	451
Cauterizations.....	56	Sclerotomy.....	7
Critchett's Operation.....	11	Tenotomies.....	157
Curetting Cornea.....	2	Other operations, unclassified.....	1
Enucleations.....	70		
Excisions and Incisions.....	114		1,466
Expression of Trachoma.....	56		

DISEASES OF THE EAR.

Auricle and External Auditory		Middle Ear.....	1,776
Canal	613	Unclassed.....	345
Internal Ear.....	142		<hr/>
Mastoid.....	62		2,938

OPERATIONS ON THE EAR.

Curetting Adenoids of Pharynx,		Plastic for Deformed Auricle....	3
Granulations, etc.....	69	Removal of Tumors, Foreign	
Curetting Mastoid Sinus.....	3	Bodies, etc.....	71
Opening of Mastoid Cells for Abscess	14	Unclassed.....	15
Excisions and Incisions, Wilde's,			<hr/>
and for Tumors, etc.....	55		251
Paracentesis Membrana Tympani..	21		

Total Number Diseases of the Eye.....	11,486
Total Number Diseases of the Ear.....	<hr/> 2,938
	14,424

Throat Department

OF MANHATTAN EYE AND EAR HOSPITAL.

Report for 1894.

This Department of the Hospital was organized in 1872. During fourteen years, to October, 1886, there were treated 8102 different patients. In five years, prior to 1887, 41,157 visits were made at our Clinics.

In 1887 there were	1,177	new patients and	8,654	visits.	Average,	7.61
" 1888	"	1,368	"	9,732	"	7.14
" 1889	"	1,539	"	11,319	"	7.38
" 1890	"	1,899	"	12,518	"	6.59
" 1891	"	1,927	"	11,762	"	6.10
" 1892	"	2,015	"	13,045	"	6.47
" 1893	"	1,907	"	11,797	"	6.23
" 1894	"	2,521	"	15,525	"	

The attendance by months during the year:

October.....	1,093	January.....	1,384	April.....	1,515	July.....	1,300
November....	1,233	February.....	1,309	May.....	1,394	August.....	1,375
December....	1,128	March.....	1,437	June.....	1,448	September..	1,025

Number of Clinics.....	306
Cases of disease treated.....	3,809
Number of patients since organization of this Department.....	22,498
Number of visits at Clinics since October 16th, 1881.....	135,809
Number of hours of service by Staff in this Department.....	3,976
Night Clinics were established three years ago, and have fully proved their necessity. Many who were unable to leave their work during the day have availed themselves of this privilege. The aggregate attendance has been.....	3,011

DISEASES OF THE NOSE AND ACCESSORY SINUSES.

Acne Rosacea.....	1	Nasal Septum, Exostosis of.....	118
Adenoids in Rhino-Pharynx.....	362	" " Hyperchondrosis.....	61
Cyst of Ala Nasi.....	1	" " Perforation of.....	18
Dermatitis, Lip and Nose.....	1	" " Perichondritis of.....	1
Eczema of Nose.....	35	" " Synechia.....	21
Empyema of Frontal Sinus.....	5	" " Ulceration of.....	11
" " Maxillary Sinus.....	3	Rhinitis, Acute.....	22
Epistaxis.....	17	" " Atrophic.....	404
Ethmoiditis.....	8	" " Chronic Catarrhal.....	23
Fibro-myxoma.....	1	" " Hypertrophic.....	427
Foreign Body in Nostril.....	9	" " Membranous.....	3
Inferior Turbinate, Papilloma of.....	3	" " Purulent.....	10
Myxomata of Nasal Fossæ.....	65	" " Syphilitic.....	21
Nasal Bones, Necrosis of.....	2	" " Vasomotor (Hay Fever) ..	3
" " Dislocation of.....	1	Rhino-Pharyngitis, Acute.....	2
" " Fracture of.....	2	" " Atrophic.....	37
" " Periostitis of.....	1	" " Chronic.....	120
" " Septum, Abscess of.....	4	" " Syphilitic.....	7
" " Deflection of.....	266	" " Stenosis.....	1
" " Dislocation of.....	10	Sarcoma of Nose.....	1
" " Echondrosis of.....	308		
" " Epithelioma of.....	0		2,433
" " Erosion.....	9		

DISEASES OF THE MOUTH AND PHARYNX.

Alveolar Abscess.....	4	Tongue, Enlarged Glands at Base of.....	126
Amygdalitis, Acute.....	35	" Epithelioma of.....	1
" Hypertrophic.....	321	" Mycosis of Base of.....	5
" Sub-Acute.....	11	" Syphilitic Ulceration of...	3
" Syphilitic.....	4	" Varices of.....	20
Diphtheria.....	10	" Wound of.....	1
Fauces, adhesion of Pillars of.....	3	Tongue-tie.....	4
Fauces, Wound of Ant. Pillar of...	1	Tonsil, Abscess of.....	2
Gingivitis.....	1	" " (circumtonsillar).....	7
Glossitis, Acute.....	2	" Acute Peritonsillitis.....	12
" Syphilitic.....	5	" Follicular.....	33
Pharyngitis, Acute.....	20	" Mycosis of.....	4
" Atrophic.....	40	" Sarcoma.....	1
" Chronic.....	160	Uvula, Bifid.....	3
" Follicular.....	37	" Elongated.....	32
" Granular.....	18	" Papilloma of.....	1
" Sub-Acute.....	26	" Syphilitic.....	1
" Syphilitic.....	27	Uvulitis, Acute.....	4
" Tubercular.....	3	Velum Palati, Adhesion of.....	2
Pharynx, Carcinoma of.....	2	" " Cleft of.....	3
" Foreign Body in.....	5	" " Paresis of (Post-Diphtheritis).....	10
" Myalgia of.....	1	" " Perforation of.....	1
" Mycosis of.....	2	" " Ulceration of, Syphilitic.....	9
" Wound of.....	2		
Ranula.....	2		
Stomatitis.....	2		
Tongue, Cyst of.....	1		1,042

DISEASES OF THE LARYNX, TRACHEA, OESOPHAGUS, AND EXTERNAL PARTS.

Abscess, Cervical.....	2	Laryngitis, Sub-acute.....	70
" Labial.....	1	" Syphilitic.....	19
Adenitis, Cervical.....	22	" Tubercular.....	40
" Sub-Maxillary.....	4	Larynx, Anchylosis of Crico-Aryt. Articulation.....	2
" Sub-Mental.....	2	" Carcinoma.....	1
" Suppurative.....	1	" Foreign Body in.....	1
Anæmia.....	2	" Oedema of.....	1
Aphonia, Hysterical.....	2	" Papilloma of.....	2
Asthma.....	2	Maxilla, Necrosis of, Sup.....	1
Basedow's Disease.....	1	Oesophagus, Stricture of, Carcinomatous.....	2
Bronchitis, Acute.....	4	Paralysis, Facial.....	1
" Chronic.....	6	Parotiditis.....	1
Bronchocele.....	16	Pertussis.....	3
Cellulitis, Subacute.....	1	Stammering.....	1
Epiglottitis, Cyst of.....	1	Thyroid, Cystic Tumor of.....	1
" Sarcoma of.....	1	Tracheitis.....	4
" Ulceration of.....	1	Tuberculosis, Pulmonary.....	7
Glossoadenitis.....	1	Vocal bands, Paralysis of.....	1
Hyoid, Fracture of.....	1	Vocal bands, Paresis of.....	1
Hysteria.....	2		
La Grippe.....	1		
Laryngitis, Acute.....	20		
" Chronic.....	81		
" Rheumatica.....	1		334

OPERATIONS

NOSE AND RHINO-PHARYNX.

For Abscess of Septum.....	1	For Echondrosis of Septum, Snare.....	2
" Adenoids of Rhino-Pharynx, Curette.....	66	" Exostosis of Septum, Electro-Trephine.....	3
" " " Rhino-Pharynx, Finger.....	14	" " " " Forceps.....	1
" " " Rhino-Pharynx, Forceps.....	58	" " " " Saw.....	43
" " " Rhino-Pharynx, Forceps and Curette.....	6	" Hypertrophy of Inf. Turb., Forceps.....	4
" Adenoids of Rhino-Pharynx, Snare.....	1	" Hypertrophy of Inf. Turb., Galv.-Caut.....	13
" " " Rhino-Pharynx, Not specified.....	35	" Hypertrophy of Inf. Turb., Saw.....	1
" Adventitious bands in rhino-pharynx.....	2	" Hypertrophy of Inf. Turb., Scissors.....	1
" Cleft Palate.....	1	" Hypertrophy of Inf. Turb., Snare.....	13
" Congenital double septum.....	1	" Hypertrophy of Mid. Turb., Forceps.....	2
" Deflected Septum, Adam's Operation, modified.....	4	" Hypertrophy of Mid. Turb., Galv.-Caut.....	1
" Deflected Septum, Asch's Operation.....	2	" Hypertrophy of Mid. Turb., Saw.....	1
" " " Bistoury and Saw.....	2	" Hypertrophy of Mid. Turb., Scissors.....	1
" " " Electro-Trephine.....	2	" Hypertrophy of Mid. Turb., Scissors and Snare.....	1
" " " Forceps.....	3	" Hypertrophy of Mid. Turb., Snare.....	15
" Division of Synechia.....	5	" Lupus Alæ Nasi.....	1
" Echondrosis of Septum, Bistoury.....	11	" Nasal Deformity, Fracture, Walsham's Forceps and intranasal spring.....	1
" " " " Chisel.....	3	" Nasal Deformity removal portion of Quad. Cart.....	1
" " " " Draw-shave.....	1	" Nasal Deformity Rouge's oper. with platinum bridge.....	1
" " " " Electro-Trephine.....	5	" Nasal Polypi.....	46
" " " " Forceps.....	1	" Necrosis of Nasal Bones.....	1
" " " " Galv.-Caut.....	1	" Papilloma Nasi, Electrolysis ..	1
" " " " Saw.....	43	" Sarcoma Nasi.....	1
" " " " Septal Knife.....	27	" Sequestrum Septi.....	1
" " " " Septal Knife and Scissors.....	4		460

MOUTH AND PHARYNX.

For Abscess, Circumtonsillar.....	6	For Hypertrophied Tonsils—Galv.-Caut. Puncture.....	6
" Abscess Lingual.....	1	" Hypertrophied Tonsils—Unilateral Excision.....	16
" " Tonsillar.....	1	" Hypertrophied Tonsil, not specified.....	34
" Adenoids at base of Tongue.....	11	" Mycosis base of Tongue, Galv.-Caut.....	1
" Adhesion of Velum Palati.....	1	" Neoplasm right Tonsil.....	1
" Adhesion of Ant. pillar of fauces to tonsil.....	1	" Ranula, Incision.....	1
" Elongated Uvula.....	14	" Sarcoma of Pharynx, Tracheotomy.....	1
" Epithelioma hard palate.....	1	" Varix, Lingual, Galv.-Caut....	1
" Follicular Pharynx, curette.....	6		213
" " tonsil, curette.....	1		
" Hypertrophied Tonsils—Bilateral Excision Guillotine.....	98		
" Hypertrophied Tonsils—Galv.-Caut. Excision.....	11		

LARYNX AND UNCLASSIFIED.

For Abscess Alveolar.....	1	For Papilloma Larynx.....	1
" Prethyroid.....	1	" Subglottic papilloma.....	1
" Abscess base of Epiglottis....	2	" Tubercular Adenitis, cervical..	2
" Carcinoma of.....	1	" " Larynx, curette....	3
" Cicatricial adhesions.....	1		15
" Cyst of Parotid.....	1		
" Foreign body in.....	1		

**Examinations made in Pathological Laboratory by Dr. Henry
B. Douglass, Pathologist for Throat Department.**

Adenoid Tissue (Post Pharynx)....	6	Mycosis tonsil.....	3
Aspergillus.....	2	Myxoma Fauical Pillar.....	1
Blood.....	3	Myxomata (nasal).....	5
Chronic Atrophic Rhinitis.....	6	Nasal Granulation Tissue.....	2
Chronic Hypertrophic Amygdalitis.	4	Pharyngeal Tuberculosis.....	1
Chronic Hypertrophic Rhinitis....	5	Pseudo-Diphtheria.....	9
Contents Middle Ear.....	1	Pseudo-Diphtheria (membranes)...	3
Diphtheria.....	3	Saliva.....	2
Ecchondrosis (nasal).....	2	Sarcoma Post Pharynx.....	1
Epithelioma of Tongue.....	1	Secretions other organs.....	4
Fibro-myxomata (nasal).....	3	Sputum.....	16
Laryngeal Papilloma.....	3	Synechia (nasal).....	2
" Tuberculosis.....	1	Syphilis of Nose.....	1
" Epithelioma.....	3	Tonsil.....	1
" Diphtheria.....	1		
" Granulation tissue.....	1	Total Examinations.....	96

RECAPITULATION.

Diseases of Larynx, Trachea, Esophagus and External Parts....	334
" " Mouth and Pharynx.....	1,042
" " Nose and Accessory Sinuses.....	2,433
	3,809
Operations in Larynx and for various conditions.....	15
" " Mouth and Pharynx.....	213
" " Nose and Rhino-Pharynx.....	460
Total Operations.....	688

MANHATTAN EYE AND EAR HOSPITAL REPORTS.

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JANUARY

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ON SIMPLICITY OF METHOD IN DETERMINING THE PRESCRIPTION OF GLASSES.

D. B. ST. JOHN ROOSA, M.D.

I AM persuaded that we have reached a point in modern ophthalmology, where very much greater simplicity exists in the methods of determining the refraction of the eye, and, as a result, greater facility in prescribing glasses, than was formerly to be obtained. The visitor to the Manhattan Eye and Ear Hospital, certainly, to the division controlled by Dr. Frank N. Lewis, Dr. Frank Van Fleet, and in which I labored for many years, and where I still exercise some supervision, will find what I am about to say amply illustrated there.

The first point to be determined in our method is, whether it is one demanding medical or surgical treatment, or one requiring nothing but general advice and hygiene. Nearly all the cases coming to us may be thus classed. It may be assumed that evident inflammations of the conjunctiva, the cornea, the iris, cases of cataract, and those of advanced glaucoma may be immediately excluded by the ordinary methods of examination from any such investigation about to be outlined.

Having first, by ocular examination, satisfied ourselves, that the case does not belong to any one of the above category, we proceed as follows: The vision is accurately tested. But we have learned, as the result of years of work in this, that it is not always an easy thing to ascertain what the vision is. Many patients are stupid, a few are aggressively intelligent, and only a small contingent are docile and objective in their answers. I sometimes find it a very difficult thing to teach a beginner in ophthalmology how to accurately determine what the vision really is; but with patience and care the art can soon be learned. It need hardly be said in the pages of such a report as this, that one eye is to be carefully excluded while the other is tested, that different sets of test letters are to be used, and all

allowance is to be made for grades of intelligence and for the precocity of youth, which can learn how to read test letters by simply looking them over. But, all these obstacles overcome, as they readily are by an experienced and patient hand, the vision is noted, $\frac{1}{8}$, $\frac{1}{10}$, $\frac{1}{12}$ + or, whatever it may be. If we find it to be $\frac{1}{8}$ or $\frac{1}{10}$, we know that there cannot be, except in entirely exceptional cases, any serious lesion of the fundus oculi, and, lest anything should be overlooked, a glance is now taken with the ophthalmoscope, even when $\frac{1}{8}$ or $\frac{1}{10}$ is obtained, and always when vision is less than normal. When decided defects in vision are found, the ophthalmoscope is used, and defects of the lens, of the vitreous, the retina, the optic nerve, or anatomical and physiological peculiarities are carefully looked for. I do not lay great stress on absolutely normal acuity of vision, $\frac{1}{8}$ — , $\frac{1}{10}$, are to me, other things being equal, normal vision, or vision which can be made normal. Nor do I attach any importance to the measurement of the refraction by the ophthalmoscope in low degrees of hypermetropia. I think it is impossible for even the most experienced observer to avoid a mistake occasionally, or even quite often, in distinguishing between a low degree of hypermetropia or a low grade of myopia. Indeed, I believe that the common mistake of our time is to suppose that a low degree of myopia is really a case of hypermetropia, with spasm of the accommodation. In my judgment, spasm of the accommodation is an exceedingly rare occurrence.

Having tested the vision, and made the ophthalmoscopic examination, if any deviation from normal vision is found, the next step is to measure the corneal astigmatism with the ophthalmometer. This being done and noted, we are ready for the tests with glasses. Should the ophthalmometer show no astigmatism, we are not without suspicion that we may have a small degree against the rule. Should it show half a diopter with the rule, we pay no attention to it in our estimate of the glasses to be used. After having noted, as just stated, the existence or non-existence of corneal astigmatism, if it be of one diopter or one and a half diopters, and vision $\frac{1}{8}$, without glasses, I would have no hesitation in prescribing the glasses

for work, if any asthenopia existed. Of course, it does exist, or the patient does not present himself or herself at the ophthalmic clinic. In case, then, I find one diopter of astigmatism and a normal acuity of vision, I prescribe a glass for close work of one-half a diopter for each eye. This refers only to young persons. If the person is presbyopic, that is, over 42 years of age, a glass is added according to the degree of presbyopia, which is determined in the usual way, by the ability to read No. 1 Jaeger type at eight inches.

In case no corneal astigmatism is found, and scarcely any manifest hypermetropia, say one-half a diopter or a low degree of facultative hyperopia, the patient is very carefully examined as to his or her general health, to see if a cause for the asthenopia may not be found, in some improper conditions of life, nervous disease, excessive use of the eyes, or the like. It is my experience that in the United States especially, excessive importance is often ascribed to the correction of minute errors of refraction, while the general condition is not carefully looked into. An eye, like an arm or a leg, has a certain limit in capacity for use, but some persons expect glasses to enable their eyes to do that of which they are incapable.

The only embarrassment or uncertainty in these examinations, occurs in the case of people who cannot read, or in very young children who cannot keep their heads still, also in some cases of nystagmus. In the first case, the vision is approximately ascertained by the test types arranged for those who do not know the alphabet. Where children are so restless that the corneal astigmatism cannot be measured, atropine must be resorted to, or we must be content, for the time, with the determination of the refraction with the ophthalmoscope.

I do not practise retinoscopy, except in extremely rare cases, and then the eyes are placed under the influence of atropia.

The power of the muscles is not measured. In our clinic I do not consider this a matter of any importance, if the fundamental conditions be obtained.

Essentially this method, of determining what glasses are to be prescribed, is practised in our division, and our results are more satisfactory than when we used atropia, when we practised

retinoscopy, and when we tested the power of the muscles, all of which methods we, at one time, employed, but which have now been abandoned for those of which I have given the above outline.

I have asked Dr. A. E. Davis to look over our records, for the last six months, to positively determine our practice as to the use of atropia, and the following result is shown :

1. Number of cases examined for glasses, 460.

2. Number of cases of convergent squint, 27.

In squint	{	atropine used in 11 cases.
		no atropine in 16 "
		—
		27

3. Mixed astigmatism, number of cases, 14.

Atropine was not used in a *single* case uncomplicated with squint, and in only eleven of the twenty-seven cases of squint.

One case of mixed astigmatism was advised to wait for vacation and have atropine instilled, but she never came back, showing that even the pauper values his time too much to have it wasted by the use of atropine. I report the case :

Mary S., aged 23 years. Lids get red after using the eyes.

Javal = astg. w. r. 3. D. 80 + 170 —

" w. r. 3. D. 95 + 5 —

R. V. = $\frac{1}{8}$: $\frac{1}{8}$ + w + 1.50c 90 C — .50c 180.

L. V. = $\frac{1}{8}$: $\frac{1}{8}$ + w + 1. c 95 C — .50c 5.

Retinoscope shows about + 2. D. and — .75 D. in each eye.

Advised to wait till vacation to use atropine.

JEQUIRITY IN THE TREATMENT OF PANNUS.

FRANK N. LEWIS, M.D.

FROM the uniformly good results, and from the fact that no bad results, as far as I can learn, have followed the use of jequirity in the treatment of trachoma with pannus at the Manhattan Eye and Ear Hospital, some of the members of the staff still regard this as a valuable agent. From recent writing, both text-books and journals, one is led to infer that in some ophthalmic hospitals the use of jequirity has been abandoned. From the time of its first introduction into this country, if I mistake not, this remedy has been used at the Manhattan Eye and Ear Hospital quite as much, if not more, than at other similar institutions. Some ophthalmic writers have, some years since, reported disastrous results from the use of jequirity. The fact that some are all too ready to take up with the most recent methods of treatment and to lay aside the older, even if the latter have given good results, may explain why some do not now use jequirity. If one has had bad results in the use of a remedy, although others may have had good results, he naturally will not continue its use. While at the hospital other methods of treatment, both operative and non-operative, have been and are still employed with good effect, yet in a certain class of cases it seems to me that jequirity gives most excellent results. The cases where in my experience jequirity is indicated, are those in which there is much pannus following the trachoma. Perhaps we do not have as great a number of these cases of late as formerly. The successful treatment of the many cases of trachoma before the stage of pannus has been reached may be one reason why we do not see more cases of severe pannus. The far too numerous hospitals and dispensaries in our city may perhaps have this as a redeeming feature, that trachoma is not allowed to go on until the cornea is partly or wholly covered by a network of blood-vessels. From my experience other means than the use of jequirity

are called for where there is very slight or no pannus. I have never seen it used where the cornea is free from the vascular condition, and should hesitate to use it in those cases. While no unfavorable results from this drug have come under my observation, yet from the reaction which follows its use, and from the reports of others who have had bad results, it would seem best to be on the safe side and to employ all precautions. Granting, then, that there may be danger, it would seem to me that this alone is not sufficient ground for giving up its use, if we can reduce this danger to a minimum. Exceptional as are these cases of advanced pannus at the present time, when one does appear the patient is indeed an object of pity ; often a young person, with poor hygienic surroundings, ill-fed, a burden and care to those who are least able to bear it, unable to do any work, and practically blind, and with the added distress of the constant inflammatory process going on. A patient with senile cataracts, while deprived of sight, does not have the discomforts incident to the condition of trachoma with pannus. All ophthalmologists naturally are interested in cases of cataract, and the brilliant and satisfactory results, both to patient and surgeon, obtained in this class of cases, leads to an enthusiasm which is well shown by the numerous articles and statistics on this subject. With good result following the treatment of cataract we may prolong the happiness and usefulness of the patient many years. In the cases of pannus, where the patients are young and relief from blindness is obtained, we accomplish a benefit as great if not greater than in the cataract cases. In my experience the good effect of the use of jequirity is largely on the pannus, and other measures are called for in the treatment of the trachoma. There usually is some diminution in the trachoma following its use, but applications of copper, alum, tannic acid, expression, etc., are indicated as subsequent treatment. The effect of jequirity is shown within a few days by the rapid lessening of the pannus, and its improvement continues for many weeks, and while the reports of ultimate vision in these cases might lead one to think that the result was anything but brilliant, there is an irregularity of the cornea which follows in all cases of pannus, so that the

vision alone is hardly a measure of the resulting good. In one of the cases herewith reported the improvement was in one eye from $\frac{1}{200}$ to $\frac{4}{200}$, and in the other eye from $\frac{4}{200}$ to $\frac{8}{200}$. This by no means expresses all the benefit of the treatment. The corneæ were freed from the vascularity, the eyeballs became white, the photophobia and lachrymation disappeared, and the patient was given vision which is useful and which will probably continue to improve.

The plan of treatment, which has been followed with these cases is as follows: The patient is taken into the hospital and never treated as an out-door patient, while jequirity is being used. A careful watch is maintained as to the reaction, and in every way the patient is given all the attention given to any case, as to general condition, diet, etc. The finely-powdered jequirity—not the infusion as formerly—is used. A small amount is dusted onto the palpebral surface of the lower lid at night. If the reaction by the following day, shown by swelling, discharge, redness, and the characteristic membrane, is not deemed sufficient, the powder is dusted in a second or third time. Then applications of iced cloths, frequent cleansing with boric acid solution and atropia. Later the use of the sulphate of copper, alum, or a strong solution of tannic acid in glycerine is used, and in some cases expression is done. It may be thought that the treatment subsequent to the use of the jequirity accomplished as much good as the jequirity, but I am sure all who have seen these cases while the treatment was being carried out will agree that the most marked improvement was immediately following its use.

Two at least of these reported cases had been under the care of oculists in other hospitals before coming to the Manhattan Eye and Ear Hospital, and had had operations done and other treatment as well.

While these four cases are only a small proportion of the number treated at the hospital with jequirity since its introduction, they represent in a fair way the usual result. No effort has been made to work up the entire statistics on this subject, but I am well informed that we have had no serious results.

Mamie S., 16 years of age, was admitted November 9, 1893. Vision of each eye was perception of light. Eyes had been sore for six years. Has had much treatment at other hospitals, and operations done twice. There was marked trachoma with very thick pannus over entire cornea of each eye. Jequirity powder was freely used in each eye, and the swelling and membrane were marked. The vascularity on the corneæ became much thinner. November 28th, a solution of tannic acid gr. 120 to glycerine $\frac{3}{4}$ i. ordered. December 9th, R. V. = $\frac{1}{200}$; L. V. = $\frac{1}{200}$. The powdered jequirity was used a second time on December 21st, and further clearing of the pannus followed. A solution of atropine was used, also tannic acid solution. After this the jequirity was tried again some weeks later, but little effect was produced, as the eyes did not seem to react as before. An operation for expression on both eyes was done, and sulphate of copper and later alum applied to lids. Atropine in castor-oil was also used. The patient was under treatment in the hospital several months after the pannus had quite disappeared, the condition of the lids requiring the frequent use of alum, and the patient has been seen at intervals since. At the present time the vision in each eye is $\frac{1}{200}$. The corneæ, while fairly clear, have a roughened surface, the eyeballs are free from redness, and the patient is able to use eyes with much satisfaction.

Nellie M., 12 years of age, was admitted on February 19, 1895. Vision R. = $\frac{1}{200}$; L. = $\frac{1}{200}$. Eyes have been sore for four years, and has had treatment at times. There was trachoma with pannus of each eye. Jequirity powder was used on left eye and a week later on the right. A moderate amount of reaction followed. Ice applications and atropine were used, and later sulphate of copper to the lids. Patient was discharged on March 18th, with V. R. $\frac{1}{200}$; V. L. $\frac{1}{200}$. Both corneæ free from pannus and all inflammatory symptoms have disappeared.

Mamie C., 18 years of age, was admitted June 1, 1895. V. R. = perception of light; V. L. $\frac{1}{200}$. There was a marked condition of trachoma and pannus of the right eye, while the left eye was in a quite normal condition. The irritation from the right eye was of such amount that she was able to use her eyes but little. Jequirity powder was dusted in right eye twice and a moderate amount of reaction followed. June 7th.—Cornea clearer and vision improving. June 18th.—Sulphate of copper has been used once daily and solution of atropine in castor-oil three times a day. June 29th.—V. R. $\frac{1}{200}$. Eyeball

white, no pannus, and patient uses eyes with comfort. Discharged. Feb., 1896—V. R. $\frac{2}{100}$.

Maggie G., 17 years of age, was admitted October 16, 1895. V. R. = $\frac{2}{100}$; V. L. = Perception of light; has had inflamed eyes for four years, with intervals of exacerbations and at times improvement following treatment. Both eyes show advanced stage of trachoma, and left eye dense pannus, with at upper part a condition of infiltration as if on the verge of ulceration. Solution of atropine in castor-oil with hot applications were used for seven days with improvement as to the infiltration. Then powdered jequirity was used, followed by iced applications, cleansing, and sulphate of copper. November 9th—Discharged; V. L. $\frac{2}{100}$. Feb., 1896—V. L. $\frac{2}{100}$.

DACRYOCYSTITIS.

JUSTIN L. BARNES, M.D.

DURING the year of 1895, one hundred and seventy-two persons afflicted with disease of the lachrymal apparatus appeared at the hospital.

I undertook the management of forty-six of these cases and studied the records of the total number admitted.

The progress of these patients I resolved to note with a view to reporting investigations. Several of these persons failed to regularly attend the clinics, and therefore, omitting statistics, I shall confine myself to observations and suggestions.

Ophthalmic practice, as in some other specialties, appears to be confined chiefly to female patients. This is perhaps due, partly, to the fact that women, rather than men, can better afford the time necessary to seek medical advice, and, partly, because civilization, with social and domestic requirements, rests with great enervation upon the average indoor-living woman, in contrast with the greater vigor of men, busy as they commonly are with more or less out-of-door life.

This superior attendance of women at the clinic is certainly well illustrated in the fact that of all the cases seen at the hospital last year, only forty-two were males, or in other words but one male to four females.

Singularly enough, of the women patients, it is a curious circumstance, worthy of note, that the great majority were between the ages of forty and fifty years. The question arises : Does this disease, essentially catarrhal, suffer a pernicious influence in *addition* to the primal or predisposing cause, by virtue of the enervating effects of more or less inactive indoor life and the resulting relaxation of mucous passages, peculiar to this age, this period of transition ?

Whatever may be said of the determining factors in the etiology of this disorder, I have made it a feature of the year's studies to direct my attention to the following points : (a)

the opening of any bony stenosis ; (*b*) The dilatation of any fleshy stenosis ; (*c*) irrigation (antiseptic) ; and (*d*) lastly, but *of utmost importance*, the avoidance of denuding the intra-ductal walls of periosteum and mucous membrane.

The opening of a bony obstruction must be performed thoroughly but with due care in order to avoid the formation of a false passage. Irrigations, of boric acid solution, frequently and carefully performed, are of great value in this disorder. I consider them of more service than many a "probing," *solus*.

But in dilating a constricted canal we have a chance to show a very great degree of skill and judgment. For I am convinced that dilatation performed with *exceeding gentleness*, avoiding any denudation of the walls of the ducts, and followed by irrigations, will effect a satisfactory result in every case of purely ductal trouble. It is not rational to regularly *thrust* through a probe of a given size—it is the contrary. But to hold the probe so gently that the sense of touch shall reveal the necessity of caution, and to insert no probe that cannot be conducted insinuatingly through the tear passage *without rupture* of the wall membranes, distinctly appeals to our common sense.

It is not to be forgotten, in conclusion, that many cases of dacryocystitis are due to faults within the nose. Every case of lachrymal obstruction should receive the benefit of a nasal examination.

SARCOMA OF THE ORBIT.

S. M. PAYNE, M.D.

September 19, 1889. Richard Humphrey, age 55, farmer, married, Cape Vincent, Jefferson Co., N. Y.

Lost sight of left eye fifteen years ago; no cause known. Did not know the sight was gone until he discovered it accidentally. No pain or inflammation. It looked just like the other for four or five years, or until ten years ago. It then began to be inflamed, and the sight of the eye looked like a drop of blood. Eye was very painful for two or three months, then the pain subsided, and the inflammation left it, but not wholly. The pupil remained the same for four or five years. It would inflame and pain tremendously for a month or longer, and then subside again. These attacks would occur once or twice a year. The bulging and swelling began in February of this year. It has been more or less painful since. The eye now seems to be an irregular lobulated tumor. The opaque and vascular cornea being crowded far down and out, and the chemotic conjunctiva protruding through the palpebral slit at the inner canthus. Tension very much increased. R. V. $\frac{1}{10}$ +. Enucleation advised by Dr. Webster.

September 20, 1889. At Manhattan Eye and Ear Hospital, the left eye was removed by Dr. Webster, and along with it all the sarcomatous growth attached to the ball and orbit so far as possible. The orbital cavity was almost entirely cleaned out, and after the bleeding stopped, the cavity was stuffed with sublimate gauze, and bandaged with absorbent cotton, much of the mass was black, and had to be dissected out piece-meal.

June 6, 1894.—Up to two years ago there was no sign of reappearance of the growth. He is now aged 60. There is a lobulated growth filling the orbit a little larger than the original eye, covered by the upper lid, which seems also involved, all but the skin. Slight purulent discharge from lids. It is not sensitive on pressure, but is very painful at times, and then becomes sore. It keeps him awake at night sometimes. Has had three children; one died of consumption at sixteen, one of scarlet fever at five, and one living healthy at thirty years of age.

June 8, 1894.—At the Manhattan Eye and Ear Hospital, by the assistance of Dr. Nichols and house staff, Drs. Johnson, Kinney, and Thompson, with others present, I removed growth. First canthotomy; second dissected up the skin of the upper lid by cutting along just above margin of the lid, and vertically along side of nose to above arch of orbit. After the

skin was dissected back it was held out of the way while the entire upper lid was removed, going down close to the roof of the orbit, and leaving upper nasal and temporal parts of orbit bare of tissue. As the tissue on the lower part or floor of orbit was not involved in the tumor it was not removed. A small amount of tissue remained at the optic foramen, which seemed not to be involved in the tumor.

A rough and ragged-edged hole was found in roof of orbit large enough to pass the little finger through about three-quarters or one inch from the optic foramen, which opened through into the cranial cavity. Mixed all through the growth were wet coaldust-looking masses that came out at different times during the operation. Orbit was firmly packed with iodoform gauze. Bled freely in spite of pressure, and had to be redressed at 6 P.M., 9.30 P.M., and 12 (midnight).

June 9th, 3 A.M., 10 A.M., and 4 P.M.—Considerable bleeding all day in spite of firm pressure. Peroxide hydrogen was used on outside of bandage to help stop the bleeding. Aside from the bleeding, he was doing well, and complained of his milk diet, and wanted something more substantial.

June 10, 1894.—Sunday, 3.15 A.M., was seized with severe pain in his head, and vomited. Gave hypodermic of magen. solution morphia \mathfrak{M} vi, after which patient slept three hours. Temperature at 7 A.M. was up to $103\frac{1}{2}^{\circ}$. At 10 A.M. Dr. Kinney dressed the wound. I ordered ice coil to the head, strychn. $\frac{1}{16}$ gr. in pill every three hours, and whiskey dr. 2 every half hour. He is very weak, and at times partially delirious. 4 P.M., hyd. chlor. mit. gr. $\frac{1}{4}$ ordered every half hour until affected. Caffeine grs. iiss alternated with strychn. sulph. grs. $\frac{1}{8}$ every two hours.

June 11, 1894, 4 P.M.—Strychn. gr. $\frac{1}{8}$ continued, and caffeine stopped. He is very weak and restless. Temperature down to 101° .

June 12, 1894.—Tuesday morning, pulse down from 120 to 88, and temperature from 103° to $100\frac{1}{2}^{\circ}$, and he felt much better. Afternoon pulse ran up to 140, and temperature to $106\frac{1}{2}$. Complained of severe pain in back of head and neck on movement, and vomited all morning. 4 P.M. Brom. soda grs. xx was given, to be repeated every four hours. He is quite delirious, and seems to be getting weaker.

June 13, 1894.—Wednesday, 2 A.M., I was called to see him, and found him delirious and picking at the bedclothes. Wednesday morning again patient has symptoms of meningitis well marked. Pupils dilated, muscular twitchings of entire body. Temperature 102° , pulse rapid, bounding, and weak.

June 14, 1894.—He sank gradually all day. At seven lungs became œdematous, and he died at 9.30 P.M.

IRIDOLYSIS.

MATTHIAS LANCKTON FOSTER, M.D.

THE common experience of every ophthalmic surgeon demonstrates that anterior synechiæ, both large and small, frequently demand operative interference notwithstanding the impression to the contrary which one is apt to receive from the text-books. A consultation of the reports of a number of prominent eye infirmaries for a series of years reveals that iridectomy is performed about six times as often for this condition as all other operations together, while attempts are frequently made with varying results to avoid the disfigurement and annoyance of an artificial coloboma and yet divide the adhesion. When the synechia is small this is not so very difficult, but when large the methods usually employed are apt to prove inadequate. Perhaps the best operation heretofore suggested was the one proposed by Mr. Wm. Lang in the Royal London Ophthalmic Hospital Reports for December, 1889, for the division of anterior synechiæ in those cases in which a large piece of iris is adherent or entangled in the cornea, but does not involve the whole width of the iris, so that an instrument can be passed between iris and cornea at the periphery of the anterior chamber. For this purpose two knives were used, one an ordinary straight knife-needle with which to make the puncture in the cornea, the other a blunt-pointed straight knife-needle resembling a tenotome, which was introduced through the opening thus made, passed beyond the synechia, and caused to divide it by means of a sawing motion.

The objections which have probably prevented the general adoption of Lang's operation are two : the employment of a special knife, and the apparent, if not real, difficulty of introducing the second knife in the puncture made by the first without loss of aqueous. These objections are both avoided in the operation I am about to describe, as well as a third which is of

less weight, the sawing motion necessary when a straight-edged knife is employed. With a curved blade the section is made by means of gentle traction on the knife, and though the traumatism inflicted by a to-and-fro movement of the shank of a needle in the cornea is very slight it is well to avoid even this when practicable.

A young man 21 years of age consulted me about the first of December, 1895, with regard to his left eye, which had been wounded with a penknife eleven years before. The eye had not caused any trouble since recovery from the injury, and if the patient had not desired to enter the militia it is not likely that he would have sought any interference at present. But as it proved a barrier to his enlistment he applied to me for removal of the disability. At that time there was a vertical linear cicatrix three-sixteenths of an inch long in the outer part of the left cornea, principally in the lower quadrant, with the pupillary border of the iris involved along the middle for about half that distance. The pupil was pyriform, displaced downward and outward. The vision of the right eye was $\frac{7}{8}$, of the left $\frac{2}{3}$, not improved by glasses. The eye appeared perfectly quiet and at first I doubted whether any operative interference was justifiable, but an exudation on the posterior surface of the lens in its outer and lower part seemed to have rather more of a bluish tint than it would be expected to have if more than ten years old and suggested the possibility of a recent exudation from the ciliary body induced by the constant irritation of the iris. After consultation with Drs. Pomeroy, Hepburn, and Webster, an operation was determined to be advisable, and on the ninth of December iridolysis was performed in the following manner, which I believe is original in its details. The instrument used was Weeks's knife-needle, the cutting edge of which is sharply concave, not unlike a sickle. This I introduced at the upper and inner part of the margin of the cornea, as nearly as possible at the point of greatest distance from the synechia, passed it across the anterior chamber, placed the sickle-shaped edge about the adhesion, and divided it with a single gentle motion of traction. Although the edge of the knife was very keen, the iris stretched

before it like a piece of thin rubber, and when it was finally cut a faint snap was heard by several gentlemen who were witnessing the operation. The iris was seen to be entirely cut free from the cornea, the knife was withdrawn, and the anterior chamber was emptied. A drop of a solution of atropine, four grains to the ounce, was instilled into the conjunctival sac and the eye bandaged.

December 10th.—Very slight reaction. Pupil round, but a filament of iris is adherent to the cornea. Atropine.

December 12th.—An attempt was made to rupture the new synechia with eserine, but failed. Subsequently several similar attempts were made with atropine and eserine, but without success, and on the 27th I again introduced Weeks's knife-needle, this time at the temporal side of the cornea not far from the synechia, and divided it as before, but the iris stretched to such a degree that it was drawn into the corneal wound with the knife and had to be replaced with a fine repositor. The anterior chamber was not emptied at the end of this operation. Atropine was instilled and the eye bandaged.

December 28th.—More reaction than before, yet of only slight amount. Atropine.

December 30th.—Eye well. Pupil round and central.

January 21, 1896.—The vision of the left eye is $\frac{2}{3}$ with + .75 D. sph \odot + 2.50 D. cyl. axis 90°.

By the kindness of Dr. Frank W. Ring, I am permitted to report the following case, which illustrates the applicability of this operation to acute cases :

A boy, 13 years old, appeared in the clinic, December 6, 1895, with a central wound in the cornea, about 3 *mm* long, made by a bit of steel, which could be seen deeply imbedded in its posterior layer. An attempt to remove this piece of steel caused complete penetration, and on the following day it was removed from the anterior chamber. The reaction was slight, but the anterior chamber remained very shallow for ten days. During this time considerable haziness had been noticed about the wound, and when the anterior chamber re-formed, it was evident that the iris had become adherent to the cornea at that place. From this time the boy complained of a sensation of burning pain in the eye, and had marked photophobia, lachry-

mation, and ciliary injection. Ice cloths, hot water, and cauterization were in turn tried. Some improvement appeared at the end of the month under the daily application of alum.

January 6, 1896, Dr. Ring performed iridolysis with Weeks's knife-needle in the manner described. Both eyes were bandaged for two days. From the time of operation there was a constant improvement in all symptoms, and in two weeks the patient was discharged well.

Remarks.—Anterior synechiæ vary in size and importance to such an extent that a definite method of treatment for all cases cannot be formulated. The term includes all adhesions of the iris to the cornea, from the involvement of a single iritic filament to the attachment of a considerable portion of their surfaces. In cases where an associated corneal opacity is central, an iridectomy is usually advisable for visual purposes, but when the synechia is situated peripherally and the central part of the cornea is clear, such an operation is undesirable. An anterior synechia distorts and displaces the pupil, interferes with its mobility, and is apt to render the iris irritable and liable to attacks of inflammation. When the synechia is very small and involves only a few fibres of the iris, these fibres become greatly stretched, and sometimes appear as a fine line joining the cornea to the margin of a mobile and only slightly distorted pupil. Such an adhesion is not very difficult to divide with the ordinary straight knife-needle, but the use of a Graefe knife or a keratome for this purpose is to be deprecated, although occasionally successful, because the elasticity of the iritic fibres causes them to yield before the edge of the knife, and the altered position of the knife as it follows the stretching fibres necessarily opens the corneal wound, allows the escape of aqueous, and permits the apposition of the iris and possibly of lens capsule to the knife before the desired section can be completed. Larger synechia, which are of considerable extent but do not obliterate the anterior chamber so as to prevent the passage of instruments between them and the angle, are more likely to demand operation, and are at the same time still more difficult to divide with any large, straight-edged knife. It was for the section of these that Mr. Lang devised the double-

knife operation of which I have spoken, and among these is to be found the class which requires iridolysis rather than iridectomy. When a considerable portion of the iris is adherent to the cornea in such a manner as to obliterate a portion of the angle of the anterior chamber, it is manifestly impossible to pass an instrument about the adhesion, and, as this condition is considered conducive to glaucoma, an iridectomy should be resorted to as a preventive measure. To what extent this class may be reduced by means of careful work with the curved knife-needle can only be a matter of conjecture at present.

In all cases where an iridolysis is indicated, the difficulty and danger of an operation with a Graefe knife or keratome, as well as the use of a special instrument, are avoided by means of the operation which I present. The shank of the knife-needle occupies the puncture in the cornea, and prevents the escape of the aqueous, while the edge of the knife is accurately placed in the desired position relative to the synechia, and then caused to cut the adherent iris by means of a gentle drawing motion. If more than one synechia is present, or if the one should be too large to be divided by one incision, repeated cuts may be made until no adhesion remains. Every step may be taken with deliberation, the progress carefully watched, and when the operation is completed the knife-needle is withdrawn. It is desirable that the aqueous should not be evacuated at the close of the operation, so care should be taken to endeavor to penetrate the cornea obliquely, and so form a valvular orifice. This is frequently done in discission, although no special effort is made to produce this result, and can probably be made the rule in this operation with a little endeavor. When the anterior chamber is emptied there is danger of agglutination of a portion of the cut edges of iris, as occurred after my first operation. The instillation of atropine into the conjunctival sac at the time of operation may not prevent such an adhesion taking place, because it acts to dilate the pupil only when the iris is freely suspended in the aqueous, a condition which itself would prevent the apposition of the raw edges. But if the anterior chamber remains filled, agglutination of these edges cannot take place.

The snapping sound heard when the iris was divided in the first operation was probably caused by the sudden retraction of the fibres of the iris, which had stretched before the edge of the knife to marked tenuity. One gentleman who was present attributed the sound to a blow of the needle upon the cornea, but this is very improbable for several reasons: I was exercising a gentle, steady pressure on the knife which would not be likely to give rise to a sudden movement of the instrument; I was not conscious of any sudden movement or of any sensation which could be referred to a sudden impingement of the knife upon a resisting substance, and a few experiments made since that time indicate that a sharp, hard blow would be necessary to produce an audible sound in that manner. In future operations the presence or absence of this sound may be noted, and possibly its origin determined.

The second operation I performed demonstrated that the knife-needle should be introduced at a point as remote as possible from the adhesion, and passed directly across the anterior chamber, in order to avoid the danger of entanglement of the loosened iris in the wound. After the knife was withdrawn, the filament of iris was seen to resemble a bit of beautifully colored ribbon penetrating the cornea, and showing the valvular nature of the puncture. An incidental point relative to its replacement seems worthy of mention. At the suggestion of Dr. Hepburn a stream of boric acid solution was allowed to fall for a short time on the cornea at the site of the puncture, and after this a very slight use of the repositor caused the iris to retreat from the wound. I am uncertain whether this pleasant result was *post hoc* or *propter hoc*, but I am inclined to believe that the stream of fluid was influential in its production.

The value of this operation to relieve active irritation of the iris is shown by Dr. Ring's case. Iridectomy with the accompanying disfigurement would have been probably the final result if this had not been done.

The results in both cases were gratifying. Æsthetically they were perfect. The displaced, pear-shaped pupils were made round and central. In regard to my own case, the vision

improved, and I was assured by an army surgeon that, so far as that eye was concerned, there were nine chances out of ten that the man could succeed in passing the physical examination for enlistment in the army. The exudation still remains on the posterior surface of the lens, and has changed little if at all in appearance.

I have placed as the title of this article the word *iridolysis*, derived from *ἶρις*, the iris, and *λύειν*, to loosen, and suggest it as a suitable name for this operation. It may seem undesirable to add a new name to the already overburdened medical nomenclature, but the operation of division of anterior synechiæ is of sufficient importance, and is performed with sufficient frequency, to deserve a distinguishing appellation. At the same time it is not advisable to employ words with definite meanings to denominate entirely different operations. Thus in one of our leading dictionaries *corelysis* and *irido-dialysis* are defined so as to make each applicable to this operation. But *corelysis* can properly be applied only to operations for breaking up synechiæ between the iris and the anterior capsule of the lens, and was originally applied to Passavant's operation, while *irido-dialysis* is usually understood to mean a tearing loose of the iris from its peripheral attachment. The reports of the New York Eye and Ear Infirmary show a large number of cases of *iridotomy* for anterior synechiæ. The construction of the word permits its use for the operation I have described, but the word itself suggests a very different class of operations. *Synechiotomy* immediately suggests itself and has possibly been employed to designate division of anterior synechiæ, but it certainly has been used to denote the division of adhesions elsewhere in the body, and is a general term applicable to the cutting apart of all varieties of synechiæ. The term *iridolysis* is free from all the objections thus suggested, can be applicable only to synechiæ of the iris, and forms a correlative term with *corelysis*, one meaning separation of anterior, the other of posterior synechiæ.

SOME NOTES ON TRACHOMA.

MATTHIAS LANCKTON FOSTER, M.D.

TRACHOMA is a contagious disease of the conjunctiva, probably of microbic origin, characterized by aggregations of cells or lymph corpuscles in its tissue which may or may not be separated from their surroundings by incomplete capsules of connective tissue. In all except the earliest stage there is present in addition a certain amount of hypertrophy of the conjunctiva and a change in its epithelium.

The course of an ordinary case of trachoma is long and tedious, extending over several years from its inception to its disappearance from the shrunken, cicatricial conjunctiva. Its appearance at various stages differs according to the degree of conjunctival hypertrophy, and distinctive names have been given characterizing these stages. The names granular, papillary, mixed, etc., first used by Stellwag, do not denominate varieties, but roughly indicate the stage to which the disease has advanced. These names are in such general use that it is perhaps unwise to attempt to replace them by others, though more appropriate ones might be found. Nevertheless I object to and protest against the use of the word granular for three reasons, viz: First, because the conjunctival elevations are not granulations; second, because some authors denominate as granular the stage called by Stellwag papillary, and so cause confusion; and third, because the use of the word tends to perpetuate the use of the term "granular lids," and to endow it with a certain sense although it has long since lost any definite meaning it may once have possessed. Patients are informed by physicians that they have "granular lids" when they are suffering from conjunctivitis, blepharitis, or even simple hyperæmia of the conjunctiva, because these are all associated

with a feeling of irritation or scratching dependent on the swollen condition of the conjunctival vessels. It is true that the physicians who make this diagnosis in such cases are not familiar with eye diseases, but the idea is strongly fixed among a large class that "granular lids" cannot be cured, and sometimes patients with easily curable affections leave the doctor's office without hope, and afterward patiently endure discomfort because they have been assured that they have "granular lids." If physicians will not dispense with this term they should certainly be careful in its use, and if they are not skilled in everting the upper lid they can certainly draw down the lower and investigate it for trachoma before hazarding such a diagnosis. For these three reasons I prefer the use of the word follicular rather than granular to denominate the first stage of trachoma.

Several authors have endeavored to make a distinction between follicular conjunctivitis and follicular or granular trachoma, but I am unable to recognize any distinguishing characteristics by means of which I may with certainty separate them. The arguments adduced in favor of such a distinction are, that the irritation caused by instillation of atropine into the conjunctival sac sometimes produces a temporary condition which closely resembles follicular trachoma, that as a rule it retrogresses after a time without proceeding to the other stages, and that the arrangement and size of the follicular swellings are different. In regard to the first argument I would simply say that, because a known agent will sometimes induce a counterfeit presentment of a disease, it does not hold that the appearance of such a presentment when this agent has not been employed is even probably a counterfeit, and therefore the fact that follicular swellings which resemble trachoma may appear after the use of atropine does not furnish an argument that similar swellings which appear when this drug has not been used are not indicative of this disease. In regard to the second argument it is known that some cases which were diagnosed follicular conjunctivitis have proceeded through the later stages. Further, in a disease in which retrogression may occur or be induced at different stages of its course, the stage during

which retrogression may be most confidently expected is when the diseased tissue is embedded in healthy surroundings, as is more or less the case in follicular trachoma before the conjunctiva has become hypertrophied.

Sometimes the follicular swellings are small, sharply defined, and placed in rows ; sometimes they are large, placed irregularly, and with ill-defined borders, but often they are intermediate between these two extremes in size and arrangement. If any distinction could be made histologically or pathologically between follicular conjunctivitis and follicular or granular trachoma, the size and arrangement of the swellings might be of assistance to us in clinically separating the two diseases, but as it is, the difference in the arrangement and appearance of the swellings is so slight that in many cases it is an acknowledged impossibility for the most expert to distinguish them. Finally, until it has been satisfactorily determined upon rational grounds that the separation into two diseases is proper, it is unwise to create such a separation when a mistake in diagnosis may result in the condemnation of a patient to a lifetime of misery, because the early stage of trachoma was mistaken for follicular conjunctivitis, which, according to many authors, requires no treatment.

During the earliest or follicular stage the disease is associated very slightly or not at all with hypertrophy of the conjunctiva. It is characterized by the presence in the palpebral conjunctiva, particularly about the folds of reflection, of pale, semi-translucent bodies, the appearance of which has been likened to that of sago grains, or, when present in considerable numbers, to that of frog spawn. Very rarely the follicular swellings are found on the ocular conjunctiva as well as the palpebral. A case which appeared in Dr. Lewis's clinic this fall was peculiar in this respect. Both above and below the follicular swellings extended from the folds of reflection upon the ocular conjunctiva nearly to the cornea, while the loose membrane in the upper cul de sac was so swollen as to protrude as a fold of trachomatous tissue below the upper lid when everted.

As the disease progresses, the conjunctiva becomes a little

congested, covered with a vascular plexus, and hypertrophy begins. As the hypertrophy becomes more marked, the red, thickened conjunctiva on the tarsal surface is thrown into folds which give it a velvety appearance, a condition termed by Stellwag, papillary trachoma. When both the follicular swellings and the velvety tarsal conjunctiva can be seen on eversion of the lids, it is known as mixed trachoma. This is perhaps the form most commonly met with, while the pure papillary form is rarely seen unless the chronic stage following acute blennorrhœa is thus known. As the conjunctival hypertrophy still increases, the follicular swellings become more and more hidden from view, but they can be found on section the same as in the earlier stages. The tarsal conjunctiva then becomes almost smooth, thick, red, yellowish in places, and may rarely be visible as a thick, red margin at the edge of the lid. By no means all, or even a majority, of the cases of trachoma reach this stage, the brawny of Stellwag. At a certain point in the development of the hypertrophy, not the same in all cases, the acme is reached and retrogression commences by the transformation of the diseased conjunctiva into cicatricial tissue, which can first be noticed in the form of white lines on the tarsal surface. With the transformation of the conjunctival into cicatricial tissue, the usual cicatricial contraction takes place and the stage of sequelæ is well under way. The severity of an attack of trachoma is usually commensurate with the degree of conjunctival hypertrophy, and the greater the degree attained the more serious are the sequelæ which may be expected.

The cornea frequently becomes hazy and vascularized, a condition known as pannus. This appears to be due to an extension of the disease to the corneal epithelium rather than to erosion of that epithelium by the roughened palpebral conjunctiva. While the pannus consists simply of a deposit of recently formed tissue on the surface of the cornea, it may undergo resorption and disappear, but if it lasts long it is likely to be transformed into connective tissue, or to involve the corneal tissue proper and cause permanent injury. A peculiar case of corneal complication, or variety of pannus, was pre-

sented during the past year in Dr. Pomeroy's clinic, by a Chinaman whose corneæ were completely covered by membranes resembling pterygia, three or four in each eye. These were torn off the right cornea by Dr. Pomeroy, in the early part of June, and one drop of a solution of tannin in glycerine, two drachms to the ounce, prescribed for each eye twice a day. About the middle of September he reappeared with his right cornea remarkably clear. The test of his vision was unsatisfactory, as he did not understand English, and could not be made to comprehend what was desired of him, but it is certain that he was led to the clinic in June, but came alone in September without any apparent difficulty.

In regard to the view that trachoma is dependent upon some micro-organism, it must be acknowledged that, notwithstanding the labors of Sattler, Michel, Muttermilch, Reid, Noizewski, and many others, there is such a lack of harmony in the results obtained that no one can say positively more than that he believes that at some future time a distinct micro-organism will be determined to be characteristic of this disease. Until this time arrives it will probably be impossible to determine accurately its origin.

Fuchs, Sattler, and others have reported cases in which trachoma has appeared as a sequela to acute blennorrhœa caused by gonorrhœa or leucorrhœa. Fuchs states that in many cases he has been able to observe the development of follicular swellings in the folds of transition and still more frequently to prove their existence by the microscopical examination of excised portions of the conjunctiva, and he believes the origin of the disease to be referable to gonorrhœa. A very different theory of origin is advanced by German, quoted by Dr. Noyes, who claims that he traced the origin of three cases of acute trachoma to the poisonous effects of soil which had entered the eyes.

During the past year, I had an excellent opportunity in the female department of one of the institutions for the care of children in this city, to observe the results of acute blennorrhœa from leucorrhœal poisoning. About one hundred eyes were involved in patients ranging in age from four to fifteen years.

In a part of these cases the gonococcus was found in the discharges from both eyes and vulva. On their convalescence all of these eyes presented the typical appearance of chronic blennorrhœa which cannot be clinically distinguished from that of papillary trachoma. After a course of treatment extending over a period of several months the velvety appearance of the conjunctiva receded and in a certain number of the cases trachoma granules could be seen, while in the majority the conjunctiva reassumed its normal appearance. Most of these patients were attacked with blennorrhœa before I was summoned to attend them and I am therefore unable to state whether any of them had trachoma previously, but an examination of the eyes of the remaining inmates revealed a smaller proportion of the disease than among the convalescents. From the superintendent I learned that slight attacks of blennorrhœa were very common at all times among the girls affected with leucorrhœa and had theretofore been treated without calling in the aid of a specialist. Assuming this to be true, it occurred to me that a demonstration of the causal relation between leucorrhœa and trachoma, if such a relation exists, could be confidently expected by a comparison of the proportionate amount of trachoma in the male and female departments of this institution. It should be stated in passing that these two departments are completely separate and situated several blocks apart, so that the danger of transmission of the disease from one to the other is of a minimum amount. Certainly leucorrhœa must be granted to be more common among the girls than gonorrhœa among the boys, but I found a much greater proportion of trachoma among the boys.

In order to corroborate the statement of Meyer that statistics show that more men than women are affected with trachoma, I made an examination of the records of the Manhattan Eye and Ear Hospital for the twenty years from October 1, 1875, to October 1, 1895, but failed to obtain that corroboration. During this period there were registered under the diagnosis of trachoma, granular lids, granular conjunctivitis, follicular conjunctivitis, and follicular trachoma, 6625 names, of which 3321 were of males, 3304 of females, prac-

tically equal numbers. It will I think be granted that among adults more men than women have gonorrhœa. If then the origin of the disease is gonorrhœal we have the right to expect to find a distinctly larger proportion of cases among males, but there is nothing in these figures to indicate the least partiality of the disease for either sex.

The treatment to be adopted in any given case of trachoma depends upon the extent of the conjunctival hypertrophy. In spite of the assertion that a large percentage of the cases included by me under the name follicular will recover without treatment, I would not consider myself justified in any given case of this character if I did not advise energetic measures. The contents of the follicular swellings can be squeezed out without material injury to the conjunctiva and the course of the disease cut short. If we wait and temporize we may too often find that the time when a serviceable operation can be performed has passed and that the patient is obliged to endure years of suffering which might have been avoided. Expression I consider the most effective treatment of trachoma when the conjunctiva is so little hypertrophic that the follicular swellings stand out plainly and distinctly. When the hypertrophy becomes so great as to partly or wholly obscure these bodies the operation does not produce good results and is to my mind contra-indicated.

Several forceps have been devised for the performance of this operation, every one of which, as far as my limited experience extends, is competent to do the needed work. Special care should always be taken to avoid tearing the conjunctiva on account of the cicatrices which result. I have seen the fold of reflection materially shortened as the result of tears of the conjunctiva during this operation. This is unpleasant, and should be strenuously avoided. The forceps with which I am best acquainted are those devised by Drs. Noyes, Knapp, and Prince. With the first two I have had an experience which extends over several years, and that experience has taught me that the roller forceps devised by Dr. Knapp are dangerous instruments in the hands of any person not thoroughly conversant with their use, and sometimes also in the hands of the skilful.

The danger of laceration of the conjunctiva is very great when the rollers do not work easily and smoothly, and interference with their action is very common. Grooves, angles, and small apertures are always difficult to keep clean and polished, and are not tolerated in most surgical instruments to any greater degree than is absolutely necessary, because they are considered dangerous as affording lurking-places for sepsis and contagion, and I know of no good reason why an exception should be made in regard to this instrument, particularly as the existence of other forceps, of different pattern but equal efficacy, demonstrate that these niches are unnecessary.

Stafford's smooth-roller forceps appear to do away with only a portion of the objectionable features I have mentioned, but I have had no personal experience with them.

The forceps devised by Dr. Noyes I consider decidedly superior to the roller forceps, though somewhat clumsy, and have used them considerably. For the last few months I have used those devised by Dr. Prince, and thus far they have greatly pleased me. There is a sufficient spring to the blades to guard against lacerations of the conjunctiva, unless from very rough usage, while sufficient pressure is maintained to express the contents of the follicles. At the same time they possess the advantage of being easily kept in an aseptic condition.

After the operation ice-cloths should be applied to the eyes every few minutes for several hours. When this is done a marked reaction seldom follows the operation, but I have seen it appear very severely when this precaution had been neglected. For the first few days afterward the conjunctiva looks a little rough, sometimes almost trachomatous, but after some days of astringent treatment this roughness usually passes off, leaving the surface of the conjunctiva smooth and apparently healthy. In a certain percentage of the cases trachoma redevelops. This is frequently, I think, due to the haste of the operator, but not always, for the most careful surgeon may fail to remove all of the lymphoid deposit, particularly when there is much conjunctival hypertrophy, and the remnant may serve to maintain the disease. A sufficient number of these unsuccessful operations have not yet come under my observation to

enable me to speak in regard to their influence in causing an increase or decrease of the hypertrophy. If it is lessened it may be advisable to extend the operation to the severer forms of the disease with the expectation of performing it several times before benefit can be obtained, but at present such an extension does not seem to me to be wise.

It is almost unanimously conceded throughout the world that in the treatment of the severer forms of trachoma our main reliance is upon sulphate of copper. This is usually and best applied by means of the crystal. The conjunctiva of the retrotarsal fold almost invariably needs the application quite as much as any other part, but is too often neglected. Next to the use of sulphate of copper, I think the best results are obtained from the use of a solution of tannic acid in glycerine, two drachms to the ounce. Exceptional cases which do not bear the copper treatment well are greatly relieved by this solution. It is best brushed on the everted lids, but can also be dropped into the eyes at home by the patient's friends. In the majority of cases it is my habit to combine the two methods, as this seems to afford quicker results. The best we can hope for in these cases is to check the advance of the hypertrophy, and hasten the transformation into cicatricial tissue in order that the result of the disease may be as little injury of the eye as possible.

EXSECTION OF OCULAR MUSCLES—A SUBSTITUTE FOR ADVANCEMENT.

JAMES ALBERT MEEK, M.D.

THIS operation may be done in all cases where advancement is indicated. It is performed in the following manner when operating on a lateral muscle: After the preliminaries—antisepsis, anæsthesia, the speculum in position, and a tenotomy of the opposing muscle has been done,—an incision is made with a Beer's knife through the conjunctiva over the longitudinal centre of the muscle to be operated upon, beginning 5 mm from the corneal margin and extending it nearly to the canthus. The conjunctiva is now to be dissected away above and below and the muscle freed from connective tissue. It is now to be somewhat raised by means of two strabismus hooks, one under either end of its free extent and held there by assistants.

Using three small curved needles, fine catgut threads are introduced through the muscle—one through its transverse centre and one on either side of the first, midway from it and the margins of the muscle; these threads, where they traverse the muscle, being in a straight line and perpendicular to its margin. The location chosen for the introduction of the threads depends on the amount of muscle to be excised—or the amount of effect to be produced. It should be about the junction of the middle and proximal thirds of the exposed portion of muscle. With a pair of straight scissors or a small scalpel it should now be cut across, 3 mm from the threads, and on their distal side. The free distal end of muscle may now be drawn over the proximal portion to enable the operator to note the point at which it should be excised. The threads are to be continued through the distal segment in the same manner as they were introduced through what is now the proximal segment. The exsection is completed by cutting off a piece of the muscle at the point previously decided upon,

bringing the two segments together, tying the sutures firmly, and cutting the free ends of catgut close to the knots. Finally, the conjunctiva is to be returned to its original position and secured by several sutures of silk. These sutures may be removed in forty-eight hours. The catgut sutures will absorb, and during this process do not cause irritation to the eye. The after-treatment should correspond to that practised in advancement.

One of the advantages of this operation over that of advancement is that the conjunctiva suffers no mutilation and no opportunity is afforded for granulations, which not infrequently follow the latter operation.

CASE.—Joseph Rathbone, 32 years old, was admitted to hospital on Nov. 11, 1895, for operation on left eye for high degree of convergent squint which had existed from childhood.

R. V. = $\frac{7}{8}$, Hm. 1.00 D.s.; L. V. = fingers at one foot.

November 13th.—Tenotomy of the left internal rectus was done and a guy was introduced. The guy was removed after forty-eight hours, the position of the eye being fully corrected.

At the end of ten days it had returned to its old position. The patient was re-admitted on December 13th, and on the following day I did an exsection of the left rectus externus as described above, except that there was no tenotomy of the rectus internus done at this time. He was discharged cured four days later, and when seen three weeks after the operation the eye had continued to retain its corrected position.

THE OPHTHALMOSCOPE IN DETERMINING AND MEASURING ERRORS OF REFRACTION.

D. H. WIESNER, M.D.

WHEN Helmholtz first used the ophthalmoscope forty-five years ago it opened an altogether new field in the study of ophthalmology ; it brought into use an instrument in itself scientific and yet requiring science and skill in its use.

Other inventions have come into use since that time—the retinoscope, the ophthalmometer, the refractometer, etc.; in the handling of these practically no knowledge is required except the make-up of the instrument and its showing. In the ophthalmoscope, however, we have an instrument that requires an anatomical knowledge of the eye, and also a skill in diagnosing what it reveals. This is not acquired in a short space of time, nor without the application of brains and common-sense.

It is the ophthalmoscope that makes the ophthalmologist.

The ophthalmoscope does and should supersede all other appliances for the study of the eye ; while in themselves useful and saving time, as with the retinoscope or ophthalmometer, yet these always will and should take second place.

Skill in the handling of the ophthalmoscope is acquired only after much patient and persistent endeavor and in knowing the anatomical and physiological conditions of both the observer's and the observed eye.

The instrument is of various kind and makes, but the Loring model, with the quadrant, is probably the simplest and easiest used.

The errors of refraction met with are *hypermetropia* or *hyperopia*, *hypermetropic astigmatism*, and *compound hypermetropic astigmatism* ; *myopia*, *myopic astigmatism*, and *compound myopic astigmatism* ; also *mixed astigmatism*. Irregular astigmatism is occasionally met with ; but this is usually due

to some change in the cornea from disease. This would apply to conical cornea also. Hyperopia is a shortening of the antero-posterior diameter of the eye, myopia being a lengthening of this diameter more than normal. Astigmatism applies to the cornea : lenticular rarely though sometimes met with ; hyperopic being a flattening more than normal ; myopic is a bulging, or having a greater convexity than normal.

While it may hardly be possible to measure with the ophthalmoscope an eighth or a quarter of a dioptré, yet one can learn to estimate within a half or three quarters.

The observer having hyperopia, when looking into an hyperopic eye, he would first correct his own error and so add this to the total result formed, but in estimating, his error would have to be deducted ; for instance, the observer having two dioptrés, the observed eye having three, of hyperopia, the final showing of the ophthalmoscope would be $+ 5$ D.; but the two dioptrés of the observer would have to be deducted in order to estimate the refractive error of the observed eye ; the same holds true when both are myopic.

When one is myopic, however, and the other hyperopic, the first tends to neutralize the second, and the amount of error in the observer's eye would have to be added to that in the observed.

This would give the rule that likes subtract and unlikes add.

Some put into the ophthalmoscope the amount of their error ; this is not always necessary, as one soon learns to allow for this.

The greatest difficulty in the way at first no doubt is one's accommodation. It requires patient and constant application to learn to control and relax this.

The direct method is always to be used in estimating ; the observer's eye as close as possible to the observed, the ophthalmoscope between the two, in order that the result may be accurate or nearly so.

Finding the eye free from any pathological change, the following parts of the fundus can be examined to measure errors of refraction : the retina, between the macula and

disc,—the carpety mottled appearance here will allow for general results, such as the amount of the hyperopia or the myopia ; then the edge of the disc, the scleral ring, may be examined—in most eyes this is clear cut and sharply defined,—taking this as a whole will allow for general results, or taking any arc of the ring by itself astigmatism may be measured ; also by finding a small blood-vessel within the disc, the smallest seen and preferably one running at right angles to itself,—this will be an excellent spot to measure for any of the errors of refraction. Each of these situations should be examined independently, and a diagnosis made from the combined results.

It is well, however, to compare the findings at the disc with the macula ; sometimes, though rarely, the refraction differs at these two places.

The *hyperopic* eye is one shorter in its antero-posterior diameter than the normal, the emmetropic, eye, and in which rays of light passing through the refractive media are focussed behind the retina. Here the fundus and the details above mentioned appear bright and clear, unless the hyperopia is of high degree, more than five dioptries, looking through the aperture. Using convex lenses of the ophthalmoscope the glass that will slightly blurr measures the amount of error ; for instance, in an eye of $+3$ D. hyperopia all is clear and bright through the aperture ; this continues so with a $+1$ D., also $+2$ D. ; with $+3$ D. a slight blurring may be noticed. Using the quadrant, with $+2.50$ D., all is bright and distinct ; with $+3.50$ D. all is blurred and indistinct. So we measure $+3$ D. as the amount of error ; thus the rule, the strongest plus glass is the measure of the hyperopia.

In *simple hyperopic astigmatism*, in one meridian, rays are focussed on the retina, in another they are refracted behind ; here the details appear clear with perhaps a prominence in brightness of the vertical meridian if the astigmatism be with the rule, and the horizontal if against, as seen through the aperture. One of these meridians, the emmetropic, will blur before the other just as soon as any $+$ lens is used ; the other is measured by the strongest convex lens that causes a slight blurring ; for instance, in an eye having $+1.50$ D. hyperopic

astigmatism through the aperture all is distinct and clear. With a + 1. D. the horizontal meridian is at once blurred and clouded, while the vertical is clear; with + 2. this meridian also is blurred; while by using the quadrant, with a + 1.50 D. the vertical meridian again shows. This is the case when the astigmatism is with the rule; the reverse obtains when against. If the astigmatism is at an off axis the same method will reveal it. Thus the rule, the strongest plus lens is the measure of the astigmatism, in whatever meridian, and the correcting cylinder is put over the eye parallel to this.

In *compound hyperopic astigmatism*, in all meridians, rays are refracted behind the retina, but in one farther than the others. Here all the details are clear and apparent except in high degrees. With plus lenses it is found that one meridian blurs, the hyperopic, sooner than the other, the astigmatic; the first lens measures the hyperopia, the second the additional hyperopic astigmatism.

When the astigmatism is at an off axis the same methods applied will reveal it; any arc of the disc may be used, or generally a blood-vessel running parallel to the axis of the astigmatism can be found.

Myopia is a condition of the eye, by many considered pathological, and rightly so, in which the antero-posterior axis of the eye is greater than normal, and in which rays of light are refracted and focussed in front of the retina. In all aspects myopia is the reverse of hyperopia.

In the myopic eye all is blurred, foggy, and indistinct, none of the details of the fundus can be made out through the aperture. The weakest concave glass that will clear up the fundus is the measure of the myopia. Care must be exercised in not going beyond this, or the result will not be accurate.

Except in low degrees of myopia, say less than — 1. D., it is easy to estimate the amount of myopia in an eye, and in these cases the skill of measuring depends on the power of relaxing his accommodation the observer has. It is in these cases of low degrees of myopia or myopic astigmatism that one's skill with the ophthalmoscope will be tested most.

In *myopic astigmatism*, in one meridian rays are focussed on

the retina ; this is seen clear through the aperture. In the other meridian, rays are réfracted in front of the retina ; this is all blurred and indistinct. The weakest minus glass that clears this is the measure of the myopic astigmatism. The axis of the correcting cylindric, however, here is to be put on at right angles to the meridian of greatest ametropia, the reverse of hypermetropia.

In *compound myopic astigmatism* the condition is that all rays are focussed or refracted in front of retina, but in one meridian farther forward than the other. Here all is blurred. The weakest minus lens that clears up the first meridian is the measure of the myopia, while the additional concave lens required to clear up the second meridian estimates the myopic astigmatism.

Mixed astigmatism is a condition in which one meridian is hyperopic and the other myopic. Each must be taken by itself. The appearance of each meridian is as before indicated, and can be measured by the same methods mentioned heretofore.

Aniso-metropia and anti-metropia can also be estimated by these methods, aniso-metropia being only a difference in degree, and anti-metropia a difference in kind of error.

Without going into any of the whys and wherefores, the object of this paper is to draw attention and interest to the ophthalmoscope in the determining and estimating errors of refraction, presenting the methods employed for such measuring in as simple and direct a way as it was possible by the writer.

THE REPORT OF A CASE OF DOUBLE SENILE
CATARACT, WITH LEUCOMA AS A COMPLICA-
TION IN EACH EYE.—EXTRACTIONS AFTER
PRELIMINARY IRIDECTOMIES.

A. EDWARD DAVIS, M.D.

I REPORT this case to show that useful vision may sometimes be restored in such cases if we are only bold enough to operate and are not afraid of vitiating good statistics.

When the patient came under my observation at the Post-Graduate School, she had been led about for three years. During that time she had been to a number of clinics, but no one would operate on her eyes, though she very much desired to have them operated on. I explained to her the liability of losing what sight she had (perception of light in each eye) from any operation, and promised her nothing. She was anxious for an operation, saying that she could not be made worse anyway. I transferred her to the Manhattan Eye and Ear Hospital for the operation.

History in brief—October 6, 1894, Mrs. E. M., aged 71 years, gives a history of several inflammatory attacks in each eye. The first attack occurred as long ago as twelve years, but did not impair vision permanently. Three years ago had a severe inflammation in the right eye accompanied by great pain. This attack lasted for six or seven weeks and left the sight much impaired, in fact, almost destroyed it. She has had two milder attacks of inflammation in each eye since.

Condition—Right eye: A dense white opacity occupies the whole of the cornea, except a crescentic portion about $3\frac{1}{2}$ mm. broad at the upper margin. Vision is perception of light, with projection good. Tension is normal; deep anterior chamber. The iris can be seen from above and reacts moderately quickly to light. The leucoma does not permit of any examination of the fundus, and it is impossible to tell if the lens is opaque or not.

Left eye: A diffuse opacity covers the whole cornea, so dense that the pupil can be seen only indistinctly. Vision is

perception of light and projection good. The iris reacts to light. Tension is normal. Some opacity of the lens can be made out through the diffusely opaque cornea.

Treatment—Right eye : After consultation with Drs. Lewis and Van Fleet, I decided to do an iridectomy "for visual purposes." On October 7, 1894, under the influence of cocaine anæsthesia, a coloboma about 4 mm. broad, was made directly upward. The wound healed without complication, but the eye remained irritable longer than is usual after simple iridectomy, and patient was not discharged till the thirteenth day after operation. The vision was not improved, and on close examination a cataractous lens could be seen through the new opening made in the iris.

On December 6, 1894, two months after the iridectomy and when the eye had become entirely quiet, I extracted the lens.

Operation—The eye was cocainized and then cleansed with a solution of bichloride of mercury (1:10,000). Section was made above ; capsulotomy. An effort was made to deliver the lens by pressure and counter-pressure with spoons, but failed. Pressure and counter-pressure was then made on the eye with the fingers on the lids, and the lens delivered with difficulty, considerable cortical matter remaining. The eye was bandaged and the Ring mask applied.

Contrary to what usually occurs in cases complicated with a large leucoma, the wound healed readily, the eye made an uninterrupted good recovery, and the patient was discharged on the thirteenth day after the operation. At the time of her discharge, however, there was so much cortical matter in the pupil that vision was only shadows.

March 8, 1895, most of the cortical absorbed. Vision $\frac{8}{800}$ w. + 8. D. cyl., ax. 90° . March 18, 1895, vision $\frac{8}{1000}$ w. + 6. D. cyl., ax. 90° . With this amount of vision she could read the coarsest print, write letters, knit, and go about the streets at will. I saw the patient only a few days ago and she maintains her vision for all these purposes, and, needless for me to say, is a very happy old lady.

Left eye : A similar course was pursued in operating on the left eye that had been followed in the right, that is, first, a preliminary iridectomy, then extraction.

Operations—January 17, 1895, an iridectomy was done up and in for visual purposes. The wound healed kindly and the patient was discharged on tenth day after operation. The vision was not improved, however, as a cataractous lens could now be more clearly made out through the coloboma in the iris.

Cataract extraction—February 14, 1895, the eye was co-

cainized and then cleansed with bichloride of mercury solution (1:10,000). Section was made above; capsulotomy. The lens was delivered by pressure and counter-pressure with the fingers on the lids, but with great difficulty. The lens seemed to be adherent to the iris. A drop of atropine was instilled, bandage and Ring's mask were applied.

A slight incarceration of the iris from the inner edge of the coloboma followed in this eye, with a resultant iritis which kept patient in the hospital for five weeks. The patient was discharged at that time with the eye quiet and with a vision of $\frac{1}{800}$. The ultimate vision in left eye is only $\frac{1}{800}$. The eye was perfectly quiet and tension normal when seen a few days ago.

Remarks—The leucoma in the right eye was more dense than in the left, but was sharply defined and left a clear margin of cornea above, which accounts for better vision obtaining in this eye.

Although refused operation by a number of surgeons, its justification, in this case at least, is shown by the result. From an invalid, led about, the patient is now able to make her own way. Of course an isolated case proves but little, but that little is a precious boon to these unfortunates.

TWO CASES FROM THE REFRACTION ROOM.

W. MERLE D'AUBIGNÈ CARHART, M.D.

CASE 1. Irene G.—, aged 13, school-girl, admitted May 7, 1892, with history of asthenopic symptoms for the past year. Has never worn glasses.

Upon examination Javal ophthalmometer showed :

O. D. Astigmatism with the rule, 4 D. axis $105^{\circ} \pm 15^{\circ}$, and

O. S. Astigmatism with the rule, $4\frac{1}{2}$ D. axis $80^{\circ} \pm 170^{\circ}$.

Ophthalmoscope and retinoscope gave the diagnosis of compound hypermetropic astigmatism of both eyes, the hypermetropia being at least 2 D. in each eye, and the astigmatism agreeing with the reading of the ophthalmometer. Atropine was ordered and used to full mydriasis. Under atropine :

V. D. = $\frac{2}{100}$, with + 2 D. s. \bigcirc + 3.50 D. cyl. ax. $105^{\circ} = \frac{2}{100}$ —.

V. S. = $\frac{2}{100}$ —, with + 2 D. s. \bigcirc + 4 D. cyl. ax. $80^{\circ} = \frac{2}{100}$ —.

Both eyes together with above correction : V. = $\frac{2}{100}$ —.

She was ordered :

O. D. + 3.50 D. cyl. ax. 105° .

O. S. + 4. D. cyl. ax. 80° .

She wore these glasses with comfort and with relief of her asthenopic symptoms until the fall of 1895, when she found her headaches from close work returning in full force. She had in the intervening three and a half years left school and gone to work in a factory.

A re-examination of her eyes, February, 1896, showed that an interesting change has taken place in her refraction.

Javal ophthalmometer now reads :

O. D. Astigmatism with the rule, $3\frac{1}{2}$ D. axis $95^{\circ} \pm 5^{\circ}$, and

O. S. Astigmatism with the rule, 4 D. axis $85^{\circ}, \pm 175^{\circ}$.

The ophthalmoscope and retinoscope, in the hands of several of the staff of the hospital in addition to myself, now gives mixed astigmatism in both eyes.

Atropine has been again instilled in order to avoid all possible error as to the diagnosis. Under atropine the result is :

V. D. = $\frac{2}{100}$ +, with — .75 D. s. \bigcirc + 3 D. cyl. ax. $95^{\circ} = \frac{2}{100}$ +.

V. S. = $\frac{2}{100}$ +, with — .75 D. s. \bigcirc + 3.50 D. cyl. ax. $85^{\circ} = \frac{2}{100}$ +.

Both eyes V = $\frac{2}{100}$.

She receives therefore for constant use :

O. D. — .75 D. s. \ominus + 3. D. cyl. axis 95° .
 O. S. — .75 D. s. \ominus + 3.50 D. cyl. axis 85° .

This case shows a change of refraction from compound hypermetropic astigmatism to mixed astigmatism in about three years and nine months. In addition the total amount of astigmatism is decreased $\frac{1}{2}$ D., and its axis is turned 10° nearer the vertical in the right eye, and 5° nearer the vertical in the left eye. The change from compound hypermetropic astigmatism, the hypermetropia being at least 2 D., to mixed astigmatism, involves an artificial myopia superimposed upon the original condition of the eyes of at least $2\frac{1}{2}$ D. We shall watch with interest to see whether this artificial myopia will continue to increase. If it does the patient will probably pass through different grades of mixed astigmatism, the hypermetropic axis decreasing in dioptries as the myopic axis increases, until she reaches simple myopic astigmatism, or even passes on into compound myopic astigmatism. The change has already been fairly great for the time involved, and it is to be feared that progressive myopia will be her fate. Unfortunately, her work and surroundings are not favorable for proper care of her eyes. Myopia is admitted to be a product of our modern civilization, and it is doubly so when, as in this instance, our customs permit young girls to spend their days working under the worst possible hygienic conditions in large factories. Constant use of the eyes for close work in young people will certainly put such a strain upon the delicate tissues of the eye, that a tendency to myopia is the natural result. Especially does such an alteration of the shape of the eyeball tend to occur when immature girls and boys, with constitutions enfeebled by inherited disease or vitiated by foul environment, are put to work which would tax the strength and vitality of adults.

Our case presents a change of $\frac{1}{2}$ D. in the amount of the astigmatism, and also a change in the axis of the astigmatism. A change in amount of astigmatism is no longer considered very rare. Hypermetropic astigmatism occasionally changes quite markedly. Recently a case was observed in Dr. Emerson's clinic, which increased from 2 D., each eye, when first observed, to $3\frac{1}{2}$ D., each eye, in not quite two years.

Myopic astigmatism changes perhaps more often than hypermetropic, and of course operative interference will often create or alter astigmatism to a marked degree.

The change in axis is rather noteworthy. What determines the axis in oblique astigmatism has yet to be demonstrated satisfactorily. The theory of Dr. G. C. Savage is that there is a "rotation of the eyeballs by the harmonious symmetrical action of the oblique muscles in all cases of oblique astigmatism." If that theory should be substantiated, the slight change of axis in our case in point could be easily accounted for by referring it to the action of the oblique muscles.

An extrinsic cause seems quite as probable as an intrinsic one, such as tilting of the lens or altered action of the ciliary muscle.

Dr. Savage's theory has been applied to refraction work in oblique astigmatism by Dr. Steele, of Chattanooga, in the following rules which I quote from the *Ophthalmic Record* :

"In those cases in which the axes of the proper cylinders for the two eyes diverge, place the cylinders at those points which will give the axes the greatest divergence permitted by the test ; and in those cases in which the axes converge, place them at the points which will give them the greatest convergence permitted by the tests. In all cases of myopic oblique astigmatism reverse the rule, converge for diverge, and diverge for converge."

CASE 2.—Edith M——, aged 18. Admitted January 9, 1896. She complains of pain in the head, occurring particularly after any close work. She has for many years—"always"—seen double, occasionally for distance, and invariably for such close work as threading a needle. She says the discomfort on use of her eyes for near work is apparently increasing.

Examination of her refraction shows no astigmatism in either eye by Javal ophthalmometer, and the ophthalmoscope gives her about $\frac{1}{2}$ D. of hypermetropia in both eyes. Her vision is $\frac{5}{10}$ + in each eye, and she accepts with the lenses +.25 D. s. in both eyes. The examination with the prisms to test her muscular insufficiency has been somewhat puzzling in consequence of the variability of her answers. It seems as if in addition to much spasm of the extrinsic and ciliary muscles there has been more than one muscle at fault and in varying degree to produce such conflicting results to our tests. The

disturbance of the muscular equilibrium evidently has not been constant on successive days, as the following tests show. On one of her first visits the Graefe so-called equilibrium test showed merely an insufficiency of the externi of about 5° in the left eye, and less in the right. Correction of her esophoria left some vertical diplopia persisting, and at first this was due apparently to weakness of the left inferior rectus. Repeated examinations have given for the lateral muscles :

At $20'$ abduction = 3° , adduction = 20° , with vertical diplopia 6° convergence.

Homonymous diplopia for distance has been repeatedly shown, and for near, without any prisms, the patient has diplopia only when looking to the left of the median line. Turning the head to the left and looking downwards produces marked diplopia. The diplopia increases as the object observed passes to the left. Using a colored glass over the left eye, the image of the right eye is seen to sink downwards, to separate from the image of the left eye, and to become more inclined, as the object passes to the left. With an 8° prism base up over the left eye, the patient has diplopia at first, but can overcome it. While the diplopia lasts, the image of the right eye is to the right and above. With an 8° prism base up over the right eye, the diplopia is not overcome, and the image of the right eye is to the left and below. In both these tests the image of the right eye is the moving one. Experimenting with prisms to correct the diplopia, we find that a prism of 4° base down over the right eye, and one of 3° base out over the left eye works fairly well.

Treatment so far has consisted in exercising the muscles by wearing for a short time each visit the prisms which correct the diplopia, but no prescription of prisms for use has so far been ordered. She reports some improvement.

The interest of this case consists in the want of co-ordination of the extrinsic muscles being apparently aggravated and modified by a debility of the entire muscular apparatus of the eyes. Whether there is a neurasthenic element involved is uncertain, although perhaps probable, judging from the circumstances of the case. No one muscle seems to be the only offender, but rather there seems to be a weakness of several of the extrinsic muscles in varying degree, as shown by contradictory or, at least, inconstant results obtained on successive occasions. The chief muscle at fault is apparently the right superior oblique, where there seems to be a marked insufficiency.

ACUTE VISION WITH CHOKED DISCS.

J. R. SHANNON, M.D.

THE interesting features of this case were its chronic character, the absence of all but the classic symptoms, and the remarkable acuity of vision.

The patient, Miss I. J——, aged 14, presented herself on March 15, 1895, complaining of headache and dizziness at night. The headaches had lasted a year, and were fairly constant. They had been getting worse for three months, at times causing nausea and vomiting for a day or more, and baffling treatment. The family history gave no trace of syphilis or tubercle; there had been a mild attack of measles at three years of age, and a very slight scarlet fever without sequelæ at six; there never had been any ear disease. Menstruation had been established six months and was regular. Heart and lungs were found, upon examination, to be normal; the urine was negative, and an examination of the nervous system by Dr. Booth failed to establish any abnormality in the manifestations of function of brain or cord.

The vision was $\frac{1}{8}$ in each eye; Hm. + .50 D.; astigmatism, none. The ophthalmoscope disclosed great swelling of both discs, the summit of the cone in each eye being focussed with + 3.5 D. There were some small hemorrhages at the periphery of both discs; the veins were enlarged; the arteries, buried in the swollen nerve head at their commencement, were otherwise normal in size and appearance; and the fundi in the extra-papillary regions, as well as the media, presented no pathological features. The fields were of normal extent, and remained so throughout, though the blind spots were, of course, very much enlarged.

I saw the patient frequently; with the exception of the month of August, once every week for six months; then, when the family moved to a more remote portion of New Jersey, once every fortnight until January 18th last. During that time the conditions showed remarkably little change. The swelling of the discs increased until it was possible to focus

the summits with + 4.5 D. Small hemorrhages came and went from time to time ; but there never were changes at the the maculæ, so that vision remained super-normal, my last record making it $\frac{3}{8}$ + in each eye on January 18th. The kidneys, lungs, and heart were periodically examined and always found normal. The patient became somewhat anæmic in November, and menstruation was absent for two months, but tonic treatment improved these conditions appreciably.

Headache, vomiting, and dizziness were the troublesome concomitants. The headache was described as "wavy," and was intermittent in character. The attacks of nausea and vomiting occurred weekly for four or five weeks, when, on hearing that the vomited matter was greenish and bilious in character, I ordered small doses of calomel on the evening before the anticipated attack, followed by a saline draught, and prohibited eating between meals. The vomiting then ceased, and, with the exception of one slight attack in July, did not reappear until November 15th. During all this time, too, the headaches seldom troubled the patient, and it was difficult to make her believe that there was anything the matter with her. In December and again in January the nausea and vomiting and dizzy spells returned with some violence, but when I saw the patient last, on January 18th, she was in excellent spirits, and said she had felt well for over a week. On Feb. 3d, she wrote to say that she had been ill, but would make her usual visit in a day or two. But she did not come ; on Feb. 4th Dr. G. Howard McFadden, of Hackensack, wrote me that she had died that morning. A few days previously the Doctor had been called suddenly to see Miss J——, and found her suffering from violent headache, and presenting all the symptoms of acute meningitis. Bromides failing to relieve, antifebrin gr. 2½, caffein cit. and camphoræ monobrom. 52 gr. 1½, was prescribed, and for the vomiting, pil. triplex No. iii. These brought repose, and on the 3d she was up and around the house. Early on the 4th the Doctor was again called, and found her suffering, but not so severely as before : temp. 100°, pulse 84. At 10.45 she died.

The treatment consisted of ascending doses of potass. iodid.

for four months, and afterwards inunctions of Squibb's oleate of mercury. These were without benefit, as far as I could see, and tonics were resorted to, with digestive correctives when necessary.

Unfortunately it was impossible to obtain an antopsy, but I am inclined to think that the lesion was a growth, probably sarcomatous, and situated presumably in the cerebellum.

A CASE OF SECONDARY GLAUCOMA.

EDGAR S. THOMSON, M.D.

J. F., aged 21, male, single, Irishman, came to the hospital November 26, 1895. The right eye was destroyed by variola eight years ago and presents the condition of anterior phthisis. R. V. = P. L.

Two months before his admission to the hospital he was struck in the left eye by a cork from a soda bottle which he was opening. His vision failed at once, but he had no pain until one week before his admission, when he began to have severe neuralgic pain in the eye and temple. There is every reason to believe that before the accident the eye was in fairly normal condition.

Present condition.—Intense injection of the entire conjunctiva. A great deal of lachrymation, and very severe burning pain in the eyeball. The anterior chamber is apparently filled with blood, as no fundus reflex can be obtained and the lens is not visible under oblique illumination. The pupil is apparently widely dilated, and the tension is greatly increased.

Treatment.—A paracentesis was at once done outward and a small globule of vitreous escaped from the wound. Eserine instilled and patch applied.

November 27th.—Less redness, no pain, tension subnormal. Eserine t. i. d.

November 28th.—Tension increasing a little; no pain, however, and eye is getting white.

December 1st.—Conjunctiva white. Blood almost absorbed. Across the upper part of the pupil can be seen the upper margin of the lens which is dislocated downward. Vision improving; says everything looks "brighter." Candle test shows marked contraction of the nasal side of the field, in the rest of the field the perception is quick and the projection is fairly accurate.

December 3d.—Anterior chamber quite clear. The lens can plainly be seen. Tension normal. Eserine continued.

December 6th.—Had a slight attack of vomiting with rise of temperature, controlled by quinine. No pain in eye. Tension normal.

December 9th.—Tension increasing a little. Slight pain.

December 10th.—Tension plus. Conjunctiva injected.

Severe pain, A paracentesis was again done and the tension reduced.

December 11th.—No reaction. Eserine as before.

December 12th.—Thinks he does not see as well. Candle shows increasing contraction of the field which is now slightly contracted on all sides. Nasal contraction about the same as before.

December 13th.—Lens growing more opaque. L. V. = P. L.

December 16th.—Tension increasing. Eserine q. 3 h.

December 17th.—Lens extracted under cocaine. An upward section was made with a Graefe knife and about half a dram of vitreous at once escaped. (Indeed, as soon as the counter-puncture was made, a small bead of vitreous exuded from each opening along the blade of the knife.) An attempt was then made to spoon out the lens, but it was found firmly adherent to the posterior surface of the iris below. It was again withdrawn to the surface of the wound and seized by a pair of iris forceps, when the capsule burst and some cortical matter was left in the anterior chamber. Eye cleansed and bandaged.

December 19th.—Dressed. Has had no pain since the night following the operation. Wound healed, anterior chamber re-formed. Some cortex in temporal side of pupil. Not much reaction.

December 22d.—Eye almost white. Eserine b. i. d.

December 27th.—Cortical absorbing. Still slight redness. Pupil still dilated. Tension slightly increased.

January 1st.—No change. Tension at times has been a little more than normal, but there has been no pain.

January 15th.—Tension plus. Stopped eserine. Ordered pilocarpine t. i. d.

January 17th.—Tension normal.

January 22d.—Tension plus. Cortical absorbed. Pupil entirely occluded by a thin membrane through which the nerve can be faintly seen, of a grayish-white color.

January 23d.—An iridectomy downward and outward was done, and a little of the membrane withdrawn.

January 24th.—Some reaction. Ice cloths. Tension normal.

January 25th.—Tension plus. Pilocarpine q. 3 h.

January 26th.—Eye getting whiter. Stopped ice cloths. Tension lower.

February 2d.—Tension again increasing. Eserine and pilocarpine alternately every hour. Some increase of redness.

February 4th.—Tension still up. Field slowly contracting. An anterior sclerotomy was done and the tension reduced.

February 5th.—Tension normal. No reaction.

February 6th.—Tension increasing. Pilocarpine t. i. d.

February 11th.—Tension slightly plus. Pilocarpine and eserine alternately every hour.

February 17th.—No change. Not much pain, but tension still increased. An iridectomy upward was attempted, but the iris was so folded back that it could not be seized. The membrane covering the pupil was broken through and a large amount of fluid vitreous escaped. Cleansed and dressed as usual.

February 19th.—Some reaction. Tension minus.

February 23d.—Tension again increasing.

February 25th.—Severe pain. Reaction still marked. Tension not increased above normal. Hot water 15 min., q. 3 h. Pilocarpine b. i. d.

February 26th.—Tension increasing.

February 28th.—Pain very severe. Tension plus. A posterior sclerotomy was done with a Beer's knife, the knife being entered between the external and inferior recti back of the ciliary muscle. About thirty minims of fluid vitreous escaped. Severe pain followed, lasting about half an hour.

February 29th.—No pain. Globe quite soft.

March 3d.—Eyeball is apparently shrinking. Tension still remains subnormal. L. V. = P. L.

Of course the chances were altogether against the recovery of any vision on account of the long period of increased tension before anything was done. The instructive feature of the case was the persistent recurrence of tension in spite of everything that was done. There was undoubtedly a considerable quantity of vitreous in the anterior chamber from the first, as was shown by the escape of a small quantity through the first paracentesis wound, during efforts to completely evacuate the anterior chamber, and also by the fact that the cornea did not come in contact with the iris after either paracentesis. The very interesting question has been raised as to whether or not the presence of the vitreous in the anterior chamber was responsible for the recurrence of tension through obstruction of the filtration angle.

ASTHENOPIA DUE TO GLARE.

S. BUSBY ALLEN, M.D.

IT seems to me that the effect of bright light upon the retina is more of a factor in asthenopia than is generally admitted. Sometimes this is due to over-exposure of the eye to dazzling light for a prolonged period. At other times there seems to exist an irritable condition of the nerve and retina that will not tolerate an ordinary amount of light. The following cases seem to prove that light upon the nerve and retina may not only be the principal but the sole cause of asthenopia :

CASE 1. Male, aged 43, good habits, intelligent, functions well regulated, eyes as near emmetropic as possible, $H = 50$ D and Presb. = 50 D or more, gave the following history : Twenty-two years ago was teaching school in the northern part of the country. He spent all his spare time trapping and hunting small fur-bearing animals ; this work was done on snow-shoes, and, after a time, the glare caused conjunctivitis. Pain over eye-brows, and blur and pain when attempting to read—these symptoms were relieved immediately by wearing green glasses when snow-shoeing or reading, and the trouble disappeared. Five years later, when studying very hard, preparing for an examination, the symptoms returned and were relieved at once by again wearing the glasses when studying. Ten years later, when teaching in a village by the river, his spare time was spent boating, and the sheen from the water caused a recurrent attack ; the glasses relieved him as formerly. Since that time there has been no trouble, as he always provides himself with tinted glasses and avoids over-exposure.

Now in the first instance this was not snow-blindness for there was no loss of vision, and after resorting to the glasses he could go on with his snow-shoeing and could read at night. There was no strain except tonic contraction of the sphincter iridis. In the second instance, that the asthenopia was not caused by strain of accommodation is demonstrated by the fact

that he was able to pursue his study upon wearing the green glasses, although they would dim the print. Here I judge we have a case of asthenopia due solely to over-exposure of the retina and nerve to dazzling light.

Cases 2 and 3 were very similar. Both were laundresses; one had myopic astigmatism, the other hypmetropia astigmatism, with cath. conjunctivitis, in both cases. They were fitted with the proper correcting lenses and the conjunctivitis was treated. The asthenopia was mitigated about one half; and, although the ground was gone over and over, nothing could be found as a cause other than the gloss from the white clothes they ironed. I kept them under observation by treating their conjunctivæ. After a time, of their own volition, they changed their occupation and acquired immediate and complete relief.

Although these are the only cases I have observed where light has played such an important part in causing asthenopia, still it is very common for patients to give bright light, electric light, sunlight, glare, dazzle, and so forth, in the bill of particulars they furnish. Hartshorn in enumerating the causes of asthenopia says: "I have met with several cases amongst those making gold lace, and no doubt the bright material here worked with had something to do with the asthenopia." Swanzy, under the head of "Neurasthenic Asthenopia," which he describes as "a peculiar and rare affection about which we have still much to learn," and in giving a list of the symptoms says:—"Hyperæsthesia of the retina dazzling is caused by even moderate light, and strong contrasts of light and shade are distressing, while *the acuteness of vision is often improved when blue or smoked glasses are worn*" (the italics are mine).

In the *British Medical Journal*, 1894, a very interesting case is described of an officer who suffered so severely from asthenopia, caused by the glare of the sunlight on the red coats of the soldiers, that he was compelled to resign from the army, although his asthenopia was relieved as long as he wore green glasses. Noyes in his last edition either ignores or dismisses this subject in the following sentence: "Hyperæsthesia retinæ has been set down as a kind of asthenopia, but it is commonly only one of its symptoms."

Pooley, in the *Medical Record*, xiv., in summing up the causes of asthenopia, mentions the electric light. In looking over a host of writers on asthenopia nowhere do I find due importance given to this subject. Its importance is suggested in a hint thrown out by Loring that *these eyes are prone to atrophy*. We have considered the subject clinically. Are there any changes in the retina or nerve associated with these symptoms marked enough, and similar and constant enough to assign as the pathological conditions belonging to them? I am aware that this is very dangerous ground for any except an "*old hand*" to describe slight changes from the normal fundus. Nevertheless this is a fair field for study. What is a normal fundus? What is a normal conjunctiva? In turning lids how many conjunctivæ does one see that would not be benefited by treatment? Show me a perfectly healthy organism in perfect order before you can show me a perfectly healthy conjunctiva or a perfectly healthy fundus. The standard is an ideal one, and in practice we only see approximations. I have observed a series of these cases, and while in very many of them I could detect nothing wrong, in some, and pretty constantly, there was an apparent change—a redness or a duskiness of the nerve, and retina near the nerve on the nasal side. Clinically one would expect to find the changes in the epithelial layer which secretes the visual purple between the retina and choroid. Of this membrane Loring says: "In early life some eyes have a disturbance of this membrane that gives an appearance as if peppered with a very fine and intensely black pepper; there is no perceptible change in the choroid or retina, but these eyes are very intolerant of light."

ORTHO-CHLORPHENOL IN THE NOSE AND EAR.

T. PASSMORE BERENS, M.D.

MONO-CHLORPHENOL (ORTHO) is a colorless oily liquid having a strong pungent odor. It is freely miscible with glycerine.

When applied to a mucous surface the drug causes a sharp burning or stinging pain which in some persons is intense for the few moments that it lasts. This pain is followed by a sense of warmth, which in turn is replaced by a sense of numbness, varying much in time of duration and in intensity according to the point of application. At the base of the tongue this numbness is considerable and persists sometimes for several hours, while in the middle ear the numbness is frequently not felt. Like carbolic acid, but not to such an extent, this drug is escharotic and leaves a thin white film at the point of application.

Since November, 1894, mono-chlorphenol (ortho) or, as we designate it, ortho-chlorphenol has been used in the clinic in many and varied cases. The object of this report, however, is to call attention to its applicability in cases of suppuration in the ear and nose.

Ortho-chlorphenol has been used in twelve cases of suppurative ethmoiditis. In all of these cases denuded bone could be detected by probe. The method was to cleanse the nose with cotton, seeking the origin of the pus with a probe and then applying the pure drug by means of a cotton applicator. These cases all did well. The average number of applications to each point being nine or ten, and not often was more than two weeks required for the complete disappearance of all purulent discharge. This was with no other treatment at the clinic or at home.

Four cases of ethmoiditis with empyæma of the frontal sinuses and myxomatous degeneration of the middle turbinates

were treated in the same manner, excepting that in addition the frontal sinuses were injected with 10 per cent. ortho-chlorophenol in glycerine. This proving painful, cocaine was first injected. The relief of the sense of fulness and distress was marked after the first treatment. In one of these cases no pus was found after the first treatment. The action of the pure drug was very marked on the small polypi as well as on the myxomatous degeneration, two to three applications in most instances sufficing to destroy a polyp the size of a large pea. One of these cases persisted for four weeks, two weeks of treatment every second day was found sufficient in the two remaining cases.

The following case will illustrate both the mode of treatment and the action of the ortho-chlorophenol.

J— D—, female, aged 23. Came under observation May, 1894, with the history of much pain in and about the eyes, nose, and face. This was first noticed five years before. The pains came at irregular times and were relieved by a nasal discharge. The pains became more frequent and severe until two years before coming under observation she noticed a progressing inability to breathe through the nose. She noticed also that the bridge of the nose was spreading and she began to cough; this was at first slight and dry but gradually became worse and accompanied by profuse expectoration. She lost flesh rapidly. On inspection she was pale, anæmic, and emaciated. Her nose was saddle-shaped, and the alae were bulged by the polypi that could be seen resting on the lip on the right side and quite filling and protruding from the vestibule on the left. Posteriorly the nares were almost occluded by the same growths. Pus was exuding both anteriorly and posteriorly. No pain was present, but there was considerable tenderness on pressure in the region of the lachrymal bones and of the antra.

Physical examination of the chest showed a bronchitis of the larger tubes. Examination of the sputa was negative. She was put on a tonic iron treatment and the polypi removed in the usual manner. This seemed an almost endless task, the whole nasal mucous membrane seemingly being involved. The membrane of the inferior middle turbinates had undergone myxomatous degeneration and pus was present in considerable quantity flowing over the turbinates and even apparently from them. She was given alkaline

douches at home while the sinuses were douched and many different local applications made at the clinic, but still the pus and in many places the polypi re-formed with remarkable rapidity. In July she went to the country for two months having a clear breathing space. In September she returned with the nose full of polypi. These were again removed. Nitrate of silver, chromic acid, persulphate of iron were used in succession. The nitrate of silver did some good, everything else was unavailing. Carbolic acid and bichloride of mercury TCO also proved of little avail. At this time 10 per cent. ortho-chlorphenol in glycerine was used to swab over the surface of the membrane and was also injected into the frontal and maxillary sinuses. This caused but slight pain and seemed to change the character of the discharge. There were several points of denuded bone detected in the anterior ethmoidal region; these were touched with the pure drug. After eight to ten applications these points could not longer be detected nor could pus be found in that region. The frontal and maxillary sinuses cleared up nicely after two weeks of treatment. While treating the ethmoid more or less of the pure drug was deposited on the degenerated membrane of the middle turbinate and seemed to set up a healthy action. Being encouraged by this the inferior turbinates were treated in like manner, small portions of each turbinate being treated at each sitting—every second day. It was noticed that a free watery secretion followed each application. Much, if not all, of this came from the parts not treated. Three applications sufficed to cover the whole surface of these lower turbinates and at the end of this time, about a week, they were considerably changed. While not denuded of the mucous membrane they presented a red and nearly smooth surface, apparently secreting normally.

The case disappeared from observation, returning in January, 1895, with severe pain over the right orbit and in the region of the lachrymal bone of the same side. The conjunctiva was injected and there was much lachrymation. Pus was found exuding from the region of the infundibulum and from the anterior ethmoidal cells. No denuded bone could be detected in spite of careful probing. Ortho-chlorphenol was used as before with the same results—immediate relief from pain, and after a week entire cessation of pus. In May she returned on account of difficulty of breathing through the left side. A large mucous polyp was removed from the middle turbinate; its

removal disclosed a small polyp beneath the middle turbinate, springing from the external wall of the nose in the neighborhood of the antral orifice. A few applications of pure ortho-chlorphenol caused its disappearance. Since this time there has been no return of polypi or pus. The bronchitis has been relieved and the patient has gained much in health and weight.

A case of very long-standing empyæma of the frontal sinus, in which the brow of the affected side was much enlarged, two cases of sphenoidal empyæma, and two cases of subacute empyæma of the antrum from diseased teeth were also treated with the ortho-chlorphenol, and they all gave very satisfactory results. In many of the cases, as in the one given in detail, the older methods of treatment were first used, showing either negative or slow results, before the treatment with the ortho-chlorphenol was begun.

EAR CASES.

Two cases of furuncle were aborted by one application of the pure drug. One case of the same disease that had advanced to suppuration, and was broken open by the insertion of the speculum was healed in five days by rubbing into the wound 10 per cent. ortho-chlorphenol. One case was not aborted by the pure drug, but did well under treatment with the 10 per cent. mixture.

Two cases of diffuse inflammation of the external auditory canal yielded promptly to three applications of the pure drug. The pain for a few moments, however, was intense.

In eight cases of chronic suppuration of the middle ear without granulations, the 10 per cent. mixture proved a rapid deodorant, and caused healing to take place quickly. Three of these cases had a thick stringy discharge. They proved no exception to the other five, healing rapidly.

Five cases of suppuration of the middle ear with granulations yielded promptly to the combined action of the 10 per cent. glycerine mixture and the pure drug. The latter having been applied direct to the granulations, it did not cause much pain. In one of these cases the canal was packed with gauze

saturated with the 10 per cent. mixture. This was not a success, for much irritation was caused not only to the exposed mucous membrane of the middle ear, but also to the membrana tympani and the walls of the canal.

Two cases of disease of the attic with necrosis were treated by first carefully draining with cotton inserted through the perforation, cocainizing, and injection of a drop or less of the pure drug; they both healed in a comparatively short time. The following case was the more severe:

J. R., male, aged 20. History of foul-smelling discharge for nearly ten years from his left ear. Inspection revealed pus exuding from a rather large perforation in the membrana flaccida. The probe found denuded bone in the region of the head of the malleus. Hartmann's canula was used for douching. A month's treatment in this manner had little if any result. Dilute nitric acid was then added to the treatment after enlarging the perforation. The discharge and odor continued. Ten per cent. ortho-chlorphenol was then used after first cleansing with boiled water and careful drying with cotton through the perforation. This gave very slight pain and but little relief. A twenty per cent. mixture did better—the odor disappeared, but the necrosis could still be detected. The pure drug was then applied on the tip of a small silver probe. This caused such slight pain that at the next sitting the drug was applied on a small pledget of cotton, and finally a drop was syringed directly into the antrum after the use of cocaine. The pain was slight and no reaction followed this injection. A later injection caused much pain for a few moments, owing to the sudden movement of the patient, causing most of it to be discharged against the membrana tympani. The reaction following this mishap was slight and cleared away in forty-eight hours. The discharge ceased entirely in three weeks from the first application of the pure drug, and healing rapidly took place.

It seems probable to the writer that the following points will be demonstrated by a further study of this drug:

It possesses an antiseptic and deodorant action similar to, but in the ear and nose more certain than, carbolic acid.

It is slightly escharotic, and leaves a film that remains until healing is complete.

Its escharotic action is intensified when in contact with diseased tissue.

It is a slight and evanescent irritant.

It is primarily painful ; secondarily, anæsthetic.

It is easily handled and seems to cause no cicatricial contraction in healthy tissue.

Its use developed no toxic symptoms.

REMOVAL OF THE OSSICLES IN CHRONIC SUP- PURATION.

JAMES B. CLEMENS, M.D.

IN cases of chronic purulent inflammation of the middle ear the advisability of removing the ossicula for the purpose of curing the discharge, and reducing the probable development of the complications which occasionally follow from an extension of the inflammatory process to the adjacent structures, is often a matter of serious consideration. The famous saying of Dr. Wilde : "So long as a discharge from the ear remains, we can never say *how*, *when*, or *where* it will end, or what it may lead to," clearly emphasizes the dangerous and insidious character of the affection, and the necessity for prompt and thorough efforts in dealing with a disease that is liable at any time to jeopardize the life of the patient.

It is in excision of the ossicles with partial or total removal of the drum-membrane that we undoubtedly possess a method of diminishing the probable occurrence of intra-cranial complications. The operation is not a serious one, provided that the proper amount of care is exercised in its execution, and the operator is thoroughly familiar with the regional anatomy. The reactive symptoms following the operation are more pronounced in some cases than in others in spite of the most delicate manipulations. The most frequent of them, viz., vertigo, nausea, and vomiting, usually subside along with the evil effects of the ether, but they are now and then seen to persist for a short time afterwards. Cases developing such alarming symptoms after the operation, as in the one reported by Harris, in the Hospital Report of 1894, are, fortunately, quite the exception. I have never witnessed such conditions in any of my cases, most of the patients being able to return to their homes after recovering from the effects of the ether, with little, if any, subsequent discomfort. The disturbance of the equilibrium is the most

persistent symptom, but it rarely extends beyond the period of seven days. Such slight reaction is hardly to be considered an objection to the use of the method in question, at least in well selected cases. The most gratifying results are obtained in long-standing cases, free from acute or subacute inflammation, where all other varieties of local treatment have failed, for this operation establishes better drainage, often removes the cause of the persistent discharge, and brings the affected mucous membrane of the tympanum directly within observation, producing conditions more favorable for receiving the local treatment.

Deafness, which is the natural associate of such a destructive process as chronic suppuration, is seldom increased and often materially lessened by this operation.

Pain seldom arises in an aggravated form. The feeling of tenderness which follows for a few days is slight and causes but little inconvenience to the patient, and is a small obstacle to the immediate employment of the subsequent treatment.

The subjective symptoms that are cured by an ossiculectomy are: frequent attacks of headache, limited to the temporal region of the affected side, earache, tinnitus aurium, a feeling of fulness in the head, occasional attacks of vertigo.

The indications for ossiculectomy in purulent discharge have been studied and applied to the following class of cases:

1. *When there is caries of the malleus: Where (a) the suppuration is confined within the atticus tympanicus and (b) where there is more or less destruction of the drum-membrane.*

2. *In old cases, with the V-shaped perforation in the posterior superior quadrant, there being a well-defined sinus leading upwards and backwards for a variable distance. Carious condition of the ossicles, in such cases, is often revealed by their extraction when the use of the probe did not demonstrate its existence.*

CASE 1. *Excision of the drum-membrane, removal of the malleus and incus, for chronic suppuration in the atticus. Ossicles carious.*

X., male, aged 28, laborer, first came to the hospital October

12, 1895. Has had discharge from left ear for past ten years, deafness, watch $\frac{1}{8}$, tinnitus aurium, severe headache. Vertigo, particularly after a hard day's work. Membrana tympani cloudy, retracted, large perforation in Shrapnell's membrane, malleus carious. Operation in October, 1895.

The case progressed rapidly under treatment, which consisted in using the attic syringe. Subjective symptoms disappeared entirely. The patient is still under observation, but no tendency to a return of the pus has been noticed.

Later : Watch $\frac{1}{8}$, whispered voice four feet.

CASE 2. *Excision of the drum-membrane and ossicles in purulent discharge. Hammer-head slightly carious. Case cured in four months after operation.*

X., male, laborer, aged 25, was first seen at the hospital June 1, 1895. Had had profuse purulent discharge from right ear for past twelve years, with deafness (watch $\frac{1}{8}$) and occasional attacks of earache. Perforation in Shrapnell's membrane, also a perforation in the posterior superior quadrant. No carious bone found from using the probe, but advised removal of ossicles. Operation June 8, 1895, slight hemorrhage. Case was discharged, cured, in four months from the date of the operation, and he remains well up to the present time.

Watch $\frac{1}{8}$. Whispered voice six feet.

CASE 3. *Prolonged chronic suppuration from right ear, large mass of granulations, frequent attacks of earache, vertigo, headaches. Malleus carious.*

X., female, aged 18, applied at the hospital February 24, 1894, for relief from profuse discharge from right ear, thirteen years' duration, due to scarlet fever ; recurrent attacks of headache, earache, and vertigo. General condition of patient good. Watch $\frac{1}{8}$.

Granulation tissue destroyed by applying chromic acid. Entire destruction of the drum-membrane was then seen to exist ; manubrium partially gone. Carious bone detected over posterior wall and over promontorium.

The patient was treated in the usual way for some time, with only transient results. Excision of what remained of the malleus followed ; incus not present.

In six months after operation all discharge had ceased.

Patient remains well.

Hearing varies. At present, watch $\frac{1}{8}$. Conversational voice ten feet ; whispered voice three inches.

The treatment of these cases after the operation and of many others that have aided in forming the basis of this report, consisted in thoroughly cleansing the suppurating cavity. The method of syringing the middle ear *per tuba*, which is generally employed for this purpose, I have long since abandoned, principally on account of the discomfort its use occasions to the patient, and I have substituted the use of Hartmann's attic canule attached to the ordinary Davidson's bulb syringe. The objections to the use of the piston syringe in the locality are too well known to require enumeration. The results accruing from the use of the canule demonstrate conclusively that it meets the requirements of such conditions. No other method has given me such satisfactory results, especially where we find more or less involvement of the surrounding structures. The utmost care and delicacy in its manipulation must be conscientiously observed, otherwise it would be better to omit its use altogether, since the careless employment of the intra-tympanic syringe is not unattended with danger. It will be found that other remedial measures will seldom be necessary to bring about prompt relief and permanent results.

MASTOID ABSCESS—HISTORY AND POST-MORTEM.

F. PIERCE HOOVER, M.D.

Michael Cohn ; age, 47 ; born in Germany ; a clerk. About nine weeks previous to February 11th, he was first troubled with his head ; at times the pain on the left side was so severe he would cry out loud in agony while busy waiting on customers. He was compelled to resign his position on this account. Thinking it was from his ear, a former patient of mine brought him to Manhattan Eye and Ear Hospital for treatment. Upon examination I found great pain and tenderness over mastoid on left side of head, swelling greater at posterior and superior border of mastoid portion of temporal bone ; marked fluctuation extending over left parietal bone.

On following day entered hospital. Head was shaved, and sol. cocaine (10 %) injected in region of the greatest swelling ; an incision was made and a large amount of pus was evacuated. On examination with a probe an opening was found in the bone, and necrosis extended quite a distance around it. Wound dressed with iodoform gauze, and patient put to bed.

February 14th.—Patient etherized and wound cleaned ; the first incision was enlarged and the periosteum separated ; all necrosed bone removed with a sharp spoon and chisels. A large bunch of granulations was found on the inner surface of the bone ; these were removed with a light wire curette. While operating a hemorrhage of dark blood occurred, supposed to be from the inferior petrosal sinus. Wound packed lightly with iodoform gauze and bandaged.

February 15th.—Bandage removed ; found considerable discharge ; slept little during night ; gave hypodermic Magendie's sol. gtt. vi. Temperature $101\frac{4}{10}^{\circ}$.

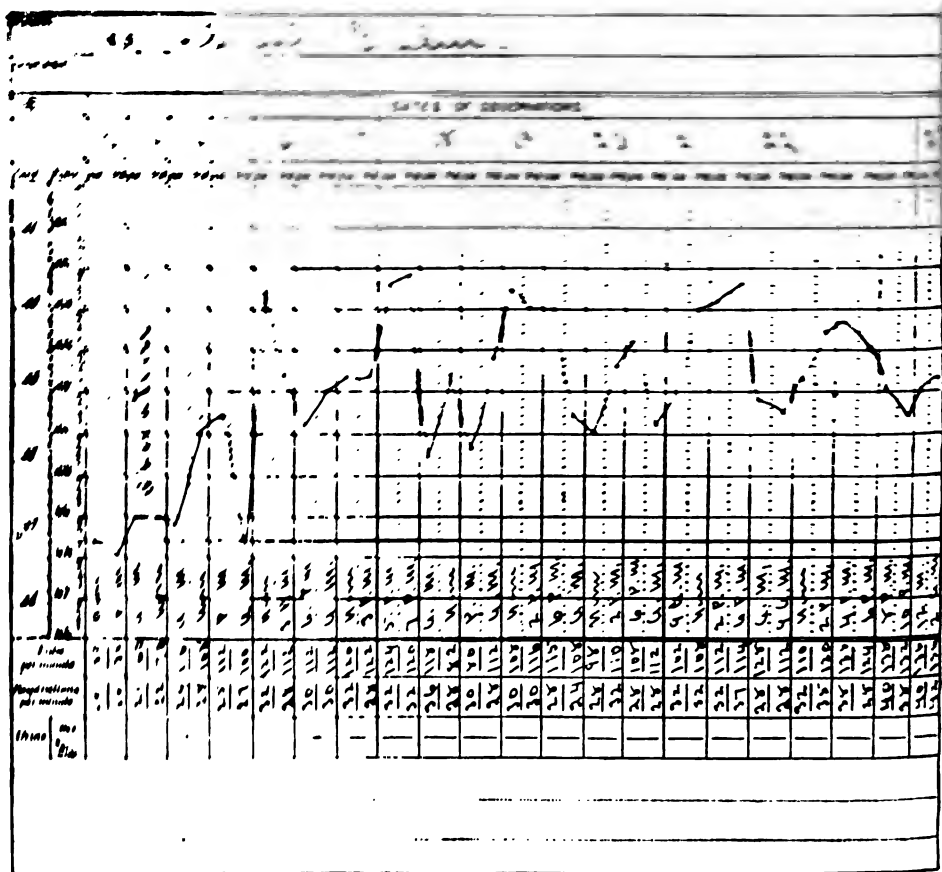
February 16th.—Syringed bichloride sol. 1:10,000 in wound ; pus present. Repacked as before. Temperature $104\frac{4}{10}^{\circ}$. Respiration 28. Pulse 112.

February 17th.—Not so much pus ; slept well night before. H_2O_2 , and then hydrarg. bichlor. 1:10,000 syringed in wound.

February 18th.—Has no pain. Maximum temperature $102\frac{4}{10}^{\circ}$. Respiration 28. Pulse 82.

February 19th.—Slept well last night ; no pain ; wound

Report of the Committee on the Progress of the
 Investigation of the Case of the Patient
 in the Hospital of the Army Medical Department
 at the Army Medical School, Washington, D. C.

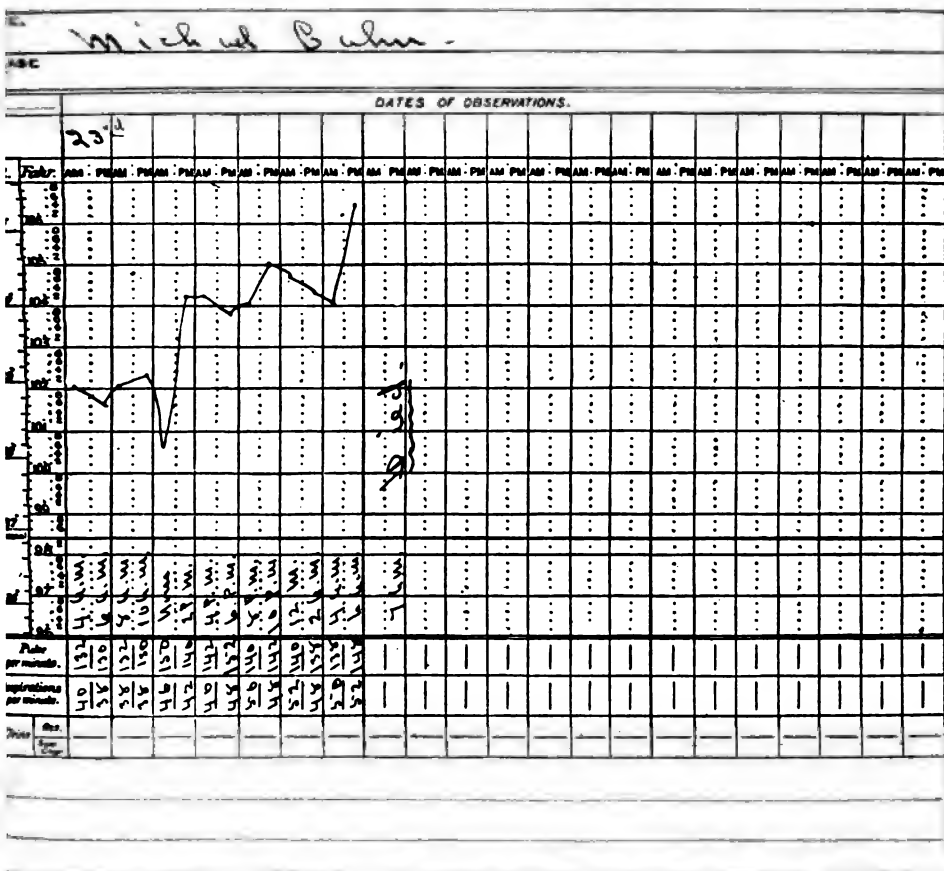


February 20th.- Slept well; very little pus; patient flighty. Treatment the same as yesterday.

February 21st. - Very flighty this A.M.; restless during night; dressed as before; no pus.

February 22d. Not so restless last night; slept most of the

time ; pulse weak and occasionally intermittent ; has slight muscular twitching. Ordered potass. brom. gr. xx., every four hours ; whiskey dr. ii., every two hours. Temperature taken every two hours ; no pus.



February 23d.—Has not had an action for two days ; ordered an enema—no result. Patient slept little until 4 A.M. ; somewhat quieter than previous night. Very flighty this A.M. until 10 ; has since then been in a stupor. 2 P.M.—Respiration, deep and rapid ; pulse, weak and irregular—responds well to

stimulants ; muscular twitchings of entire body. 8.30 P.M.—Pulse, very weak and irregular. Treatment, same.

February 24th.—Did not sleep at all during night. Pulse gradually becoming weaker. At 7 A.M. patient died.

POST-MORTEM EXAMINATION.

When skull-cap was taken off, found the dura mater and pia mater, and all curvings of membrane of brain œdematous, so much so that all the lobes were pressed down, the frontal especially. When dura mater was cut through over cerebellum, a fluid that looked semi-purulent, not normal, was found. The lateral sinus extending back on that side to junction of sup. longitudinal sinus was a purulent thrombus ; this also extended into the superior petrosal sinus. The inferior petrosal sinus was free ; dura mater not wounded at all ; granulations were found on dura mater, also on bone below. No polyps found in tympanic cavity.

In making post-mortem, after opening the calvarium, a spontaneous separation of the parts in neighborhood of the mastoid occurred, disclosing to view a drum membrane, *perfect*, and the malleus and other ossicles.

The specimen was placed among the collection of pathological specimens in the hospital, and was one of the finest of the kind I ever saw.

EXTENSIVE NECROSIS OF THE PETRO-MASTOID FOLLOWING MIDDLE-EAR SUPPURATION.

M. D. LEDERMAN, M.D.

IT is not unusual to meet with marked softening and caries of the mastoid process in children, when this portion of the temporal bone has become secondarily affected from a suppurative otitis media. At this period of life, the bony structure does not offer much resistance to an infectious invasion, and pus readily finds its way to the surface. In the adult, however, the density of the cortical layer of the mastoid retards the progress of the pathological process in that direction, and consequently less resisting tissues become attacked, and extensive destruction may take place, without marked external manifestations. The appearance of general symptoms will establish the fact that a septic process is active in the economy.

The middle-ear cavity being peculiarly adapted for the propagation of the numerous pathogenic bacteria, and its location being in such close proximity to vital parts, we should never hesitate to promptly employ operative measures. We must not lose valuable time in deliberating whether the mastoid should be operated upon, for if symptoms exist which cannot be controlled by palliative measures, it is our duty to open the mastoid and carefully explore it for the *agens morbi*. Under antiseptic precautions this operation need never be feared, but I regret to state that we are inclined to delay this procedure. In cases of middle-ear suppuration, complicated by mastoid involvement, with existing cerebral symptoms, it is not imperative to attack the mastoid at once, as the intra-cranial pressure is the dangerous symptom, and should be relieved promptly if possible.

Through the kindness of Dr. David Webster, who referred the case to me, I am able to report the following history :

Phœbe B., sixty-two years old, came under observation April 16, 1895. She was a deaf-mute, with fairly good health. For a year she had been troubled with soreness in the right ear. There was at first a scanty discharge, followed by some pain. These symptoms persisted with more or less severity up to the date of examination. Three months ago paralysis of the right side of the face occurred suddenly.

April 16, 1895.—*Condition at time of examination by Dr. Webster.*—Right external canal filled with polypi, so that no view of the deeper structures could be obtained. There was a profuse and very offensive purulent discharge from right canal, with marked pain around the ear and on top of head. Some tenderness around auricle, especially in front. Temperature was normal. Urine examination proved negative. Dr. Webster thoroughly curetted external canal and tympanum, removing considerable polypi. Parts were cleansed with bichloride solution (1:5000), and packed with iodoform gauze.

April 18th.—Wound dressed. Very little reaction. Temp. normal. Discharge profuse, but less offensive. Cleansed with bichloride solution and peroxide of hydrogen twice daily. Canal packed with iodoform gauze.

April 21st.—Some improvement. Discharge profuse, but much less offensive.

April 25th.—Condition unchanged. Considerable bleeding when dressing is changed. Boric acid solution substituted for bichloride.

April 26th.—Treatment was continued, but discharge was very profuse. After cleansing with boric acid solution, the following powder was dusted into canal twice daily :

℞. Acid boric.

Alum aceto-tartrate, \overline{aa} , $\overline{3}$ ii.

Lycopodium, $\overline{3}$ iv.

April 27th.—Discharge very offensive, and greater in quantity.

April 28th.—Number of polypi removed with curette. Some necrosed bone found posteriorly. Less discharge, but still very offensive. Some pain.

April 29th.—No reaction from previous manipulation. Discharge quite profuse, but less offensive. Marked tendency to bleed.

April 30th.—Tenderness on pressure over mastoid, with some swelling and redness. Leeches applied to mastoid.

May 6th.—As tenderness over mastoid still persisted, the case was turned over to me for operation. Temperature for the last few days remained around 101° F., but patient did not complain of chills. On examination I found the canal filled

with pus and granulation tissue, which gave off an exceedingly offensive odor. Pressure over mastoid showed same to be very sore and boggy to the touch.

Under ether an extensive incision was made in the usual position, as I anticipated considerable destruction of the mastoid cells. Pus appeared immediately after the first incision, and flowed quite freely. A large amount of dead bone and granulation tissue was removed by means of the curette. On probing, the tip of the mastoid was found necrosed, and same was removed, with the degenerated soft tissues found in the field of operation. In clearing out the upper and posterior portion of the antrum and cells the finger encountered the dura mater, proving the extensive spread of the suppuration process. Further manipulation succeeded in merging the tympanic cavity and mastoid opening into one. The external canal and middle ear were thoroughly cleansed by means of curette and antiseptic douching. Though the opening in the mastoid was very large, in fact corresponding to the entire portion of this part of the temporal bone, the lateral sinus had not been opened. Almost three fingers could be introduced into the wound, which was packed with iodoform gauze.

May 7th.—Patient passed a comparatively good night. Some retching after the operation, which was rather prolonged. Temperature $99\frac{1}{2}^{\circ}$ F., mouth.

May 8th.—Temperature normal. Dressing removed, and some discharge from canal was observed. Wound otherwise clear. Packed as before, and dressed daily with hydrogen peroxide and bichloride solution.

May 9th.—Wound clear. No odor. No discharge. No rise in temperature. Slight pain in head.

May 10th.—Some slough on posterior wall of cavity, with more discharge and odor.

May 11th.—Slough was removed with forceps. Ordered parts to be cleansed with Labarraque's solution.

May 13th.—Wound clean; no odor.

May 15th.—Granulations springing up rapidly near surface. These were cauterized, and wound dressed as before.

May 18th.—Condition improving. Wound clean and rapidly filling.

May 20th.—Surface granulations again cauterized.

May 25th.—Small sinus found on inner wall of cavity filled with pus and debris; same was curetted and packed with gauze. Temp. $99\frac{1}{2}^{\circ}$ F.

May 26th.—Sinus cleansed; not so much discharge, and opening larger. Remainder of wound healthy and granulating slowly.

May 30th.—Improving. Wound clean and sinus healing.

June 9th.—Odor more offensive, and wound cleansed of unhealthy granulations.

June 11th.—Hemorrhage from mastoid through ear, nose, and mouth, saturating dressings. Wound cleansed and redressed, 7 P.M. Severe hemorrhage into naso-pharynx. Posterior tamponing had to be resorted to by the house-surgeon, Dr. Thomson, to arrest same. Patient quite weak.

June 12th.—Bleeding again appeared, but was checked by firmly packing the mastoid opening with gauze. Inability to move the left leg and arm was noticed for a few days past. Marked depression resulted from the loss of blood, and the patient gradually weakened until she passed away ten days later.

Remarks.—At the necropsy, a probe was passed into the mastoid wound in a posterior direction for a distance of almost two inches, showing the remarkable loss of osseous tissue. Almost the entire mastoid process, together with a decided part of the petrous portion of the temporal bone, was destroyed by the necrotic process. Communication between the posterior and middle cerebral fossæ had been established through the upper portion of the wound. As the patient had been confined to the bed from the time of the operation until her death, no disturbance of equilibrium was observed, though the semi-circular canals were involved. The hemorrhage in the last days resulted from ulceration of the lateral and inferior petrosal sinuses. Her condition of mutism kept indicative symptoms hidden, though cerebral action itself was never impaired. That the necrotic destruction had been going on for some time previous to the external manifestation of the mastoid involvement, is shown by the marked facial paralysis early in the disease. During the illness no changes were observed in the optic nerves. Softening of the lower portion of the right temporo-sphenoidal lobe of the brain was found, accounting for the paralysis of the arm and leg on the opposite side.

DISEASE OF THE MASTOID—A REPORT OF SEVENTEEN CASES.

WENDELL C. PHILLIPS, M.D.

MY object in making a report of cases of mastoid disease is, chiefly, to call attention to three histories in detail of patients who presented some rather uncommon symptoms and conditions, and at the same time to add a mite to the general literature upon this most important and serious complication of ear diseases.

Out of a total of 830 patients, 17 or 2 per cent. were those of true mastoid inflammation, not all, however, going on to suppuration and operation.

Of these 17 cases, 4 or 23½ per cent. were children, all of whom were operated upon.

Nine were operated upon by the usual methods employed for opening the mastoid antrum, the remaining eight recovering without operation.

Four of the operative cases had suffered from a prolonged O. M. S. C., and four resulted from severe attacks of O. M. S. Ac., while the remaining one had no middle-ear suppuration, but had an extensive, external, suppurative periostitis extending from the zygoma anteriorly over the entire mastoid region downwards over the upper portion of the sterno-cleido-mastoid muscle.

A Wilde's incision opened up a very large abscess cavity, and the periosteum over the region of the antrum being slightly denuded with several superficial soft spots in the bone, it was deemed wise to make a small opening into the cells, which was done, but no pus found.

One had had suppurative mastoiditis with extensive necrosis for one year, and is reported in full.

Of the acute cases operated upon, one followed an attack of la grippe, one scarlet fever, and one nasal diphtheria.

The latter patient, M. B., 2½ years, had O. M. S. Ac., mastoiditis, and lymphoid tissue in the vault of the pharynx.

Seven days previous to admittance to the hospital a diagnosis of nasal diphtheria had been made and antitoxine was administered.

There were no indications of diphtheria at time of examination at hospital. A free opening was made into the mastoid, and case went on favorably for four weeks, and the sinus was nearly healed when the inflammation, swelling, and temperature reappeared, and it became necessary to reopen the former incision.

Denuded bone was found which was curetted, and usual after-treatment employed. For two weeks the wound looked unhealthy, with no tendency to granulate and close, after which time it closed rapidly. Slight interest is attached to this case on account of its having so quickly followed the employment of antitoxine.

The only fatal case was one of extension into the lateral sinus, a full report of which may be found in a paper by Dr. Marcus Kenyon in this number of the *MANHATTAN EYE AND EAR HOSPITAL REPORTS*.

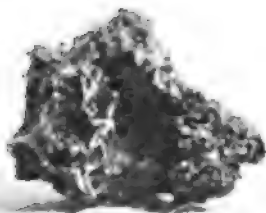
The following case of extensive necrosis of the mastoid bone is reported in full, with illustration.

E. P., age 10 years. Had scarlet fever one and a half years ago, and from that time her ear trouble dates. There has been a constant discharge from the left ear since beginning of trouble, which always had a disagreeable odor. Family physician made a Wilde's incision one year ago, and entered the mastoid antrum.

Present Condition.—Considerable swelling over left mastoid. Auricle thrown out and forward. A small sinus behind and above the auricle leading into the upper part of the mastoid cells. Canal occluded by granulation and a large piece of necrosed bone. Considerable discharge from sinus, very foul-smelling. A good deal of redness over mastoid. Slight pain, considerable tenderness. Admitted to hospital April 24, 1895.

April 25th.—Operation by Dr. Phillips. Incision over the mastoid beginning in the sinus. As soon as the periosteum and tissue were retracted a large sequestrum of bone about an inch long was removed without difficulty leaving the canal freely

open into wound. A few sharp edges were chiselled off and the wound washed and packed with iodoform gauze. Bandaged.



April 26th.—Doing well. Temperature $99\frac{1}{2}^{\circ}$ pulse 120.

April 28th.—Dressed. Wound perfectly clean, and a thin layer of lymph thrown out over surface of wound. Syringed with bichloride and packed as before. Temperature $99\frac{1}{2}^{\circ}$ pulse 98. Dressed every day.

May 1st.—Improving. Color better. Wound clean, no discharge. Wound healing rapidly from below.

May 8th.—Rt. ear began to discharge. On examination found a lot of granulations near drum.

May 9th.—Considerable discharge. Ordered syringe Rt. ear with H_2O_2 and bichloride t. i. d. Inflate t. i. d. Wound healing rapidly. No discharge.

May 16th.—Discharge in right ear stopped. Left mastoid healing rapidly. Same treatment.

May 21st.—Still little pus in right canal. Ordered $AgNO_3$ (grs. xx to $\frac{3}{4}$ i.) to granulation t. i. d. Dust with boric acid afterward.

May 26th.—Very little pus in right canal, only a small sinus in upper part of left mastoid. No discharge.

May 28th.—Discharged cured.

CASE OF MASTODITIS, LEFT SIDE, FOLLOWED EIGHT MONTHS
AFTERWARDS BY AN ATTACK ON RIGHT SIDE. SECOND
ATTACK ABORTED.

L. H., age 20 years, admitted March 9, 1895. For past eight weeks has had discharge from the ear with considerable pain and tenderness in front of the auricle. Was kept in bed and treated with douches, morphine, etc. For the past three or four days there has been considerable swelling behind the ear and over the mastoid process, with discharge from canal and intense pain behind the ear and down the neck.

Present Condition.—Large amount of swelling over left mastoid with some redness and a great deal of tenderness. Considerable induration down the neck for an inch below the tip of the mastoid. Has severe pain. Profuse purulent discharge from the canal. Temperature 101° , pulse 104° .

March 10th.—*Treatment*: Cleaned with H_2O_2 and hot boric acid. Dr. Phillips made a Wilde's incision below the mastoid and pushed back the peristeum. Some pus at once exuded from the opening near the posterior part of the mastoid. This opening was enlarged with a chisel and a quantity of thick pus was washed out. The whole of the external wall of the cell was then chiselled out and the cavity washed out. Some fluid washed through the cells and out of the canal. Packed with iodoform gauze and dressed with bichloride gauze.

March 14th.—Dressed. No discharge either from canal or wound. Induration subsided. Temperature $98\frac{1}{2}^{\circ}$, pulse 84. No pain.

With the usual treatment she made a good recovery and was discharged March 26th cured.

December 22, 1895.—Returned.

The left ear has remained well since operation M. T. has healed with but little destruction. There is slight retraction and some haziness in inferior segment. Hearing nearly normal.

Three days ago began to have pain in the right ear extending over mastoid region. Patient says, "It has started in just as the other did." M.T. very much inflamed and bulging and much tenderness over mastoid.

Admitted to hospital and paracentesis performed. Hemorrhage but no pus. Leeches to mastoid. Hot-water douches and hot-water bag and tampons of campho-phenique.

After four days, pain and tenderness had subsided, and, she was discharged cured.

CASE OF MASTODITIS ASSOCIATED WITH LARGE ABSCESS ABOVE THE ZYGOMA AND ANTERIOR TO THE AURICLE, ABOUT FOUR INCHES IN DIAMETER.

J. J., 25 years of age, admitted May 17, 1895. For the past three years has had a constant slight discharge from left ear, for past five months this has been much worse. Two years ago a swelling began to appear above the ear and anteriorly. This was opened and patient made good recovery. One week ago, the swelling recurred in the same place and was accompanied by good deal of pain.

Present Condition.—A large fluctuating tumor above zygoma and anterior to auricle, about four inches in diameter, some swelling extending over top of mastoid; considerable tenderness over tumor, but none over tip of mastoid. Some discharge from canal.

General Condition.—Good. Temperature, normal.

Treatment.—Dr. Clemens made an incision over mastoid and pushed aside periosteum with some difficulty, as it was very dense and firm. He then chiselled out a large opening into mastoid cells and scraped out a lot of granulation tissue from the attic. Next made an incision parallel to zygoma into tumor, and evacuated about $f\frac{2}{3}$ iii of very offensive pus. No sinus communication between tympanum and abscess cavity could be found. Cavities thoroughly irrigated with boric acid solution 4% and then packed with 10% iodiform gauze and bandaged. Patient's temperature rose to 103° after operation, but on following day, May 18th, dropped to 100° . Reacted well. Has some pain in head.

May 19th.—Temperature 98° . Doing well. Pain less.

May 24th.—Both wounds healing rapidly. No discharge. Up in afternoon.

May 28th.—Improving. Still complains of stiffness and soreness after dressing, but wounds are perfectly clean. Inflate once daily.

May 31st.—Improving.

June 3d.—Doing well. Same dressing and treatment.

June 7th.—Discharged. To come to clinic. Some discharge from ear. Solution passes through two openings freely but little tenderness and no pain. Same dressings.

Discharged, cured, October '95.

I am indebted to Dr. Kane for his assistance in arranging the histories.

A CASE OF CHRONIC OTORRHOEA RESULTING IN
DEATH FROM ACUTE SEPTIC LEPTO-MENIN-
GITIS AND PHLEBITIS.

MARCUS KENYON, M.D.

On September 18, 1895, P. L., aged 40, a man in good general health, applied for treatment for a chronic discharge from the right ear of five years duration. Of late there had been some pain in the temporo-parietal region, and mastication of food caused pain in the præ-auricular region; free discharge of pus emitting a foul odor; no tinnitus nor vertigo. Watch not heard when pressed on the auricle. Inspection revealed a large polypus filling the entire auditory canal. This being snared away, it was found to have its origin from the post. sup. part of the cavum tympani. The *Mt* was absent. Shrapnell's membrane was hyperæmic, swollen, and sensitive to the probe. Carious bone was probed for, but none found. There did not appear to be any free communication between the attic and tympanic cavities. Nothing further was done except cleansing the ear by syringing with warm boric acid solution at home.

A few weeks later he returned and reported great improvement. The pain had disappeared with the removal of the polypus. The discharge had diminished and was not malodorous. Watch heard eight inches. Examination showed pus coming from the attic, but no carious bone could be detected. Granulation tissue appeared at the site of the former polypus. Treatment was advised for these unsatisfactory conditions, but owing to the pressure of his business at that time it was postponed, although the home treatment was continued.

On January 26, 1896, the patient came to my office again, and stated that forty-eight hours previously he had ridden on the front platform of a street car in a cold wind, and there had been pain in and near the ear ever since. The discharge from the ear had nearly ceased since the exposure. He had slight chilly sensations, anorexia, insomnia, and malaise. There was moderate swelling in the region of the temporo-maxillary articulation, and below the ear along the jugulars, these parts being painful and quite sensitive on pressure. The mastoid was painless, presenting merely a slight tinge of redness. Temp.,

99.2°; pulse, 80. No nausea nor vomiting, and no tinnitus nor vertigo. On examination the deep portion of the auditory canal was seen to be of a peculiar bluish slate color, and the veins of the superior wall were dark and distended. There was no swelling, the *Mt* absent, and but slight purulent secretion on the labyrinth wall. He was advised to syringe the ear frequently with hot water, apply ice around the ear, take $\frac{1}{4}$ gr. tablet of hyg. chlor. mit. every hour until the bowels responded, and to rest in bed.

27th, 12 M. Patient went to place of business in the morning, but feeling too ill to remain, returned home. Pain has increased in same locations. Temp., 100°; pulse, 86. No mastoid symptoms. Advised him to go to bed. Applied leeches in front of tragus and behind lobule, following this with ice bag encircling the ear, and thorough frequent hot douching. Bowels had acted well. 7 P.M. Had a marked chill at 5 o'clock. Temp., 101°; pulse, 90. Treatment continued, excepting the calomel tablets.

28th, 12 M. Pain and swelling have diminished. Ear is discharging more pus. Slept better and feels much better, taking more nourishment. He came to this clinic at 2 P.M., and an ophthalmoscopic examination of the eyes by Dr. Van Fleet gave a negative result. Appearances, as well as the patient's own statements, seemed to indicate much improvement, and he was advised to continue treatment at home, with the addition of phenacetin for headache. 7.30 P.M. Has had a very severe attack of headache, temporal and frontal, right side, which has subsided, and he is now resting comparatively easy. The swelling and pain in front of and below the ear have almost entirely disappeared. Mastoid normal and ear discharging pus. Feels weaker. Temp. is subnormal, 97.6°; pulse, 100, weak, and developing perceptible irregularity in both rhythm and strength—the combination often noted in early meningitis.

29th, 12.30 P.M. Pulse, 100, weak, irregular; temp., 101.8°. Vomited this morning, the first and only time during the entire illness. The mastoid process now shows slight swelling and redness, is slightly painful both spontaneously and on pressure. Some pain in the head. 5 P.M. Patient arose from bed an hour ago and immediately broke into a profuse perspiration, which lasted an hour and a half. He now feels greatly relieved in every way, all pain and headache having ceased, but is weak. Temp., 102.6°; pulse, 104, weaker.

30th, 10 A.M. Headache returned, more in frontal region. Desires to enter the hospital, and was received at 2 P.M. with temp., 104°; and pulse, 130. Ophthalmoscopic examination

negative. Four leeches were applied to the mastoid, followed by a cold Leiter's coil. Hot douches in ear every hour. Calomel $\frac{1}{4}$ gr. every hour until bowels act. Phenacetin gr. v. every two to three hours p. r. n.

31st. Restless during night, some pain, principally frontal. Pulse, 100; temp., 103° ; resp., 30. Ear coil removed and head coil substituted.

February 1st. Occasional attacks of pain in various parts of the head. Some drowsiness. Mental faculties dull. Takes frequent and short naps. Takes nourishment fairly well. Ophthalmoscopic examination negative. Temp., 102.5° ; pulse, 80, and occasionally intermittent,—the characteristic pulse of acute meningitis. The Cheyne-Stokes respiration is gradually appearing.

2d. Had a bad night, was very restless with much complaint of pain, especially at the base of the brain, which was not controlled by sedatives. Stupor, and Cheyne-Stokes respiration marked. Temp., 102° ; pulse, 80, intermittent and irregular. It now appearing certain that the patient could not survive twenty-four hours in this condition, it was decided to open the mastoid and endeavor to trace the route by which the brain had become involved. Hope was entertained that some circumscribed collection of pus, either extra- or intra-dural, might be the principal cause of the symptoms present, which if released would afford a possibility of recovery.

Operation by Dr. Clemens at 11 A.M. Upon chiselling the bone to the depth of half an inch toward the antrum a drachm or more of foul-smelling whitish pus was liberated, and irrigated with bichloride solution. There was a small area of softened bone in the wall of the lateral sinus, but the sinus was normal in appearance. The antrum being opened no more pus was found. The attic was thoroughly curetted and much cholesteatomatous material removed. Careful search with a small probe failed to reveal any evidence of carious bone in the tegmen of the tympanum, antrum, or mastoid process, except at the spot in the sinus wall. Bichloride irrigation passed freely from the wound out the ext. aud. canal. Wound packed and dressed. The patient revived from ether, but stupor returned and he died at 8 P.M.

The *autopsy* showed a general lepto-meningitis, most marked at the base posteriorly, with general phlebitis and thrombosis of the superficial veins, especially at the base of the right hemisphere. The dura mater was adherent over a small area about 8 mm in

extent, to the osseous wall of the middle portion of the lateral sinus where softened bone was noted during the operation. The sinus was normal excepting microscopical evidence of sinus periphlebitis found on examination by Dr. C. A. Valadier. The other cranial sinuses were normal and no other changes were discovered. The temporal bone was not removed. These lesions explain the initial pain and swelling, except perhaps that of the præ-auricular region. While this was probably due to phlebitis, it may have been caused by pus finding its way through a dehiscent petroso-squamosal suture. On the second day of his illness it was evident that a grave intra-cranial complication had supervened, apparently involving the lateral sinus. In this connection, together with the swelling and pain in front of the ear, the venous stasis of the osseous canal, seen on the second day, has a peculiar significance. By the fourth day septicæmia was clearly established, and on the same day the symptoms pointed strongly to meningitis, which became certain from the slow intermitting pulse later. Positive mastoid symptoms did not appear until the sixth day, still from the fact of pre-existing purulent otitis media with undoubted extension of the purulent process, and in view of the extreme gravity of these cases, an early mastoid operation was indicated. The patient opposed this view until the sixth day, when the mastoid became painful. The early operation would be both exploratory and therapeutic in its aims. In no other way can these dangerous conditions be successfully attacked. Human skill is not equal to every such emergency, but with an enlarging experience and the great encouragement afforded by recent brilliant results of early operative interference in similar cases (Macewen, Barr, and others), diagnostic acumen will develop, and many lives will be saved by timely action. Nothing, however, could more forcibly demonstrate the wisdom of those who advocate thorough and efficient treatment of middle-ear suppuration than the deplorable result in this case. With modern methods, such as the use of Hartmann's attic canula, and ossiculectomy when indicated, or Stacke's operation, or some of its modifications, together with other well known measures, all cases of suppurative disease of

the temporal bone and its cavities, or of the ossicula auditûs, even of the semicircular canals, whether carious or not, may be regarded as amenable to surgical treatment, provided no constitutional disease forbids. Many cases will thus be permanently cured, and in all, even when the discharge does not entirely cease, the danger of fatal complications is most surely eliminated by the important fact of establishing a free outlet and perfect drainage for the purulent secretions. Prevention is here the only safe or tenable ground. The time has come when the intelligent medical adviser is not heard to indiscriminately advocate the do-nothing policy for the manifold pathological conditions characterized by a common symptom—otorrhœa.

ICHTHYOL IN RHINITIS ATROPHICA FŒTIDA.

T. PASSMORE BERENS, M.D.

IN last year's Manhattan Eye and Ear Hospital Report the results of this treatment were given in detail. Seventy-eight cases were then reported. It is now my object to report ninety-nine new cases together with the present condition of forty-four of the cases treated during 1894. The treatment is the same as last year, *i.e.*, pure ichthyol very carefully applied by means of cotton-armed probe to the affected parts at the clinic two or three times weekly ; the patient's home treatment consisting of a salve made of ten to twenty per cent. ichthyol and ten per cent. eucalyptol in vaseline. This is used twice daily.

The same classification is used as last year, viz :

I. Slight atrophy with pharyngitis sicca, scabs, and odor.

II. Advanced atrophy with pharyngitis sicca and often laryngitis sicca, scabs, and odor.

III. Very advanced general atrophy with almost complete loss of the turbinates. Much odor and large offensive scabs. Marked scabbing in pharynx and laryngitis sicca, with or without scabs.

Class I. Twenty-four cases treated : eighteen "much improved" in two to four weeks, the remaining six in about six weeks. Salve was used at home about four weeks longer.

Class II. Forty-four cases treated : thirty-two were "much improved," eight "improved," two not improved, and two did not return after the first treatment. On an average four months of treatment at the clinic suffices for these patients, although four found a much longer treatment necessary. The salve was used at home in some of the cases two or three months longer.

Class III. Thirty-one cases treated : ten were "much improved," fifteen were "improved," and six were not im-

proved. Of these six, however, four did not return and two came too late in the year for sufficient treatment. The time of treatment was from six to nine months.

Forty-four of the patients reported last year give the following results :

Class I. Ten returned : six of these showed no signs of a return, two used vaseline occasionally, and two found the occasional use of the ointment necessary.

Class II. Eighteen returned : eight used vaseline occasionally for dryness in anterior nares, but had no odor or scabs ; four used ointment occasionally for dryness in nose and pharynx ; two returned with slight scabbing but no odor ; and two returned with scabs and odor.

Class III. Sixteen returned : eight have no scabs or odor, and find only occasional use for the ointment ; four find a monthly visit to the clinic necessary, they have no odor and but slight scabbing ; Two have slight odor and scabs ; and two have had a recurrence. In the further study of this drug the conclusions arrived at last year have been amply confirmed. It is an analgesic, antiphlogistic, and deodorant. It stimulates secretion and is a marked aid to the healing of ulcerations. In many of the cases it seems to serve the purpose of a massage treatment stimulating not only the membranes but also the vessels. Its antiseptic action is doubtless due to the sulphur set free.

In conclusion I would thank my colleagues in the clinic, Doctors Douglass, Harris, Haskin, Norris, and Farrell, for their kind co-operation. Many of the cases here reported have been entirely under their treatment.

NEW REMEDIES IN NOSE AND THROAT DISEASES.

C. E. MUNGER, M.D.

F. K. ROARKE, M.D.

DURING the past year, a variety of so-called new drugs has been employed in the throat department in the treatment of nasal and laryngeal diseases. Of these, some have been but recently introduced to the medical profession and although a few of these are but older drugs dressed in new clothes, they may be classed as new remedies; the others, while not new drugs strictly speaking, have not been generally employed, we believe, in the domain of rhinology and laryngology.

This report is based on the work of the past year as shown by the clinical records.

With some of the drugs used, excellent results have been obtained; while with others, the report is less favorable and it is not probable that they will displace the older and well-tried remedies in the treatment of the various diseased conditions in which they were employed.

ARGENTAMIN (a solution of 10 parts of silver phosphate treated with 10 parts of ethylene diamin in 100 parts of water) has proved itself of much value in the treatment of catarrhal and purulent rhinitis. After thorough cleansing, a 5-10 per cent. solution was either mopped over or sprayed on the mucous membrane. After two or three such applications a decided amelioration of the symptoms occurred—the purulent discharge was lessened in a marked degree and a rapid cure ensued. The application of this remedy in the strength mentioned above should be reserved for the physician only and made not oftener than every second day. A weaker preparation— $\frac{1}{2}$ to 2 per cent.—may be given to the patient for daily use at home.

In some cases where there was a profuse post-nasal secretion, it gave relief but did not prove itself as efficacious as solutions of argentum nitrate.

In the treatment of eczema alæ nasi, it again proved itself inferior to silver nitrate. In its use in the larynx, it was noted that it did not cause the disagreeable spasm that frequently follows the intra-laryngeal applications of silver nitrate. Aside from this favorable remark it cannot be said that it proved as successful in the treatment of chronic laryngitis as did the older silver salt.

ACETANILID was used extensively, either undiluted or combined with stearate of zinc, as an insufflation on nasal wounds after operations—especially those on the nasal septum. The pure powder produced more favorable results as a dressing to the wounds than when mixed with the zinc stearate. After its use, the time required for healing of the wounds was much less than we were accustomed to expect. In several cases, the frontal headache and neuralgic pains frequently following intra-nasal operations were absent. Whether this happy result was due to the absorption of some of the drug from the nasal cavity is an open question, for no cyanosis, profuse sweating, cardiac depression, or other unfavorable systemic effect was observed.

The following cases are quoted as evidence of the rapid healing of nasal wounds dressed with acetanilid :

CASE I.—January 11th, ecchondroma septi removed with saw and septal knife. Acetanilid insufflated. January 16th, wound healed.

CASE II.—January 24th, cyst of right turbinated body removed. Acetanilid insufflated. January 29th, wound healing kindly.

CASE III.—Ecchondroma septi removed. Three days later, wound healed anteriorly.

CASE IV.—December 11th, spur removed from septum. Acetanilid insufflated. December 16th, wound almost healed.

CASE V.—January 15th, septal spur removed. Acetanilid insufflated. January 20th, healing rapidly.

CASE VI.—Septal spur removed. Acetanilid insufflated. Three days later, wound healing rapidly.

The above cases represent the unfailing results obtained from the use of this drug as an application to nasal wounds.

As a hæmostatic it was unsuccessful, since prolonged oozing was observed several times after its application.

TANNIGEN (acetyl tannin) is, as its name implies, a new form of tannin. It is a "fine powder of a yellowish-gray color, tasteless and odorless," and freely soluble in alkaline solutions and cold alcohol. It was used in cases of hypertrophic rhinitis and chronic naso-pharyngitis in varying strengths. For application in the physician's hands, an alcoholic solution of a dram to the ounce was employed: while for the patient's use, it was given in proportions varying from ten grains to one dram to the ounce, the vehicle being what is known as "oleum hydrocarbon compound." This preparation was proposed by Dr. W. F. Chappell and consists of a mixture of unguentum zinci oxide and benzoinol with the addition of a few drops of oleum gaultheriæ and oleum sassafras. Insufflations of the pure drug into the nares produced such severe frontal pain of a neuralgic character, lachrymation, and coryza, followed in several hours by extreme dryness of the nasal and superior pharyngeal mucous membrane, that its use was discontinued. In the strength of one dram to the ounce, it brought about such a condition of the nasal and naso-pharyngeal membrane as to lessen the discharge, but it did not perceptibly reduce the size of the turbinates.

In several cases, tannigen in this strength seemed very irritating and a weaker solution—ten grains to the ounce—seemed to be much more beneficial in these particular cases. Occasionally the discharge and feeling of fulness in the nose was somewhat lessened, though more often the results were negative. Briefly, it may be said that tannigen did not produce the desired results but that it seemed to act as a stimulant, rather than as an astringent, to the nasal mucous membrane.

FORMALIN (40 per cent. aqueous solution of formaldehyde) was found to be an effective deodorizer and disinfectant in $\frac{1}{2}$ —2 per cent. solutions for intra-nasal and pharyngeal use. The following cases illustrate its usefulness in syphilitic ulcerations.

CASE I. January 20, 1896, J. L., age 34, came to hospital complaining of difficulty in swallowing and sore throat.

Examination showed a deep and extensive ulceration on the posterior pharyngeal wall. There was a clear specific history. The ulceration was cauterized with pure silver nitrate fused to tip of a probe.

January 22d, no improvement. A 2 per cent. solution of formalin was then sprayed upon the ulceration.

January 29th.—Ulceration entirely healed and the dysphagia had ceased.

CASE II. Male, age 30, came to hospital January 29, 1896 with a large, irregular, syphilitic ulceration on the posterior pharyngeal wall, extending from a point opposite the tip of the epiglottis, upward and into the naso-pharynx. Much pain and soreness was complained of. A 2 per cent. solution of formalin was thoroughly sprayed over the affected parts.

February 3d.—Patient returned to the hospital with the ulceration entirely healed and the pharyngeal mucous membrane healthy in appearance.

CREASOTE CARBONATE has been used in a number of cases of follicular tonsillitis with uniformly good results. In these cases, no other treatment, either local or constitutional, was employed.

CASE I. Attack began August 4th, and the patient came to the hospital the following day. Both tonsils were swollen and tender, and the orifices of the crypts filled with thick exudations. Pure creosote carbonate was thoroughly rubbed into the tonsils and on August 7th the patient returned to the hospital entirely cured.

CASE II. Patient attacked by acute follicular tonsillitis August 17th. Creosote carbonate applied August 19th. August 21st, cured.

In one case of chronic follicular tonsillitis, the exacerbations were successfully and quickly controlled by local applications of the pure drug.

In a few cases of chronic follicular pharyngitis in which this method of treatment was tried, it was unsuccessful. No smarting, nausea, or other unpleasant symptom was noted after its use.

Although acute follicular tonsillitis is a self-limited disease, the attack is apt to last at least a week, and a great amount of discomfort and suffering are often entailed. The good effects

in these cases where creasote carbonate was employed were certainly very marked, and if the successes in the future at all equal the apparent successes in the past, the local use of this drug in acute follicular tonsillitis will prove of paramount value.

PYROZONE.—Two strengths of this preparation were used, three and twenty-five per cent. The former has been quite extensively used as an antiseptic and hæmostatic after intranasal and pharyngeal operations, and has proved quite satisfactory. This strength has also been of service as a deodorizer and in softening crusts and scabs preliminary to their removal from the nasal mucous membrane. The twenty-five per cent. solution—called “caustic pyrozone”—was found not to cause as much pain, even in the nose, as we had at first been led to expect. In cases of follicular pharyngitis and tonsillitis it was either swabbed over or sprayed on the affected parts very thoroughly, with results, in the main, beneficial, though in acute follicular tonsillitis creosote carbonate was far more prompt and successful. Its use seemed very favorable in a few cases of pharyngitis lateralis, and in mycosis of the pharynx the results were still more encouraging. In the milder cases the “caustic pyrozone” was simply rubbed into the mycotic patches, while in the severer form its application was preceded by currettement of the affected points. In this latter class pyrozone showed its property as a hæmostatic very successfully. As a caustic application to hypertrophies at the base of the tongue it was useless.

LYSOL (the saponified coal-tar product composed chiefly of cresols) was not used extensively. In $\frac{1}{4}$ to 2 per cent. solution it seemed to be a good antiseptic spray in those cases where we are accustomed to use carbolic acid solutions; but as to relieving atrophic or hypertrophic rhinitis, its results were not at all apparent. It frequently proved very irritating to the mucous membrane, and its use was discontinued.

THIOL (artificial ichthyol and proposed substitute for the latter) has not proven itself of much value in the treatment of nasal disorders. It was substituted for ichthyol in cases of atrophic rhinitis with but little benefit, ichthyol being

resorted to later with much prompter and better results. Its freedom from staining properties and the absence of disagreeable odor make it more pleasant for intra-nasal use than ichthyol. However, it is but just to state that the use of this drug in a more concentrated state is desirable before giving final results as to its usefulness.

ORTHOCHLORPHENOL (Monochlorphenol).—This drug was used very extensively in atrophic and ulcerative rhinitis and in the cases of eczema alae nasi in which argentamin was not employed. The secretion and crusts in eczema alae nasi, lessened very promptly under its influence, and the excoriations healed kindly. At first the pure drug was used, but as it frequently caused severe smarting and burning, a 25 per cent. solution in glycerine was substituted with much less discomfort to the patient and with as much success in the arrest and cure of the disease. Healing resulted even more promptly than after the application of the silver nitrate, and no staining followed as in the use of the latter drug. In one or two cases a 1 per cent. creamy solution (ol. hydrocarb. co.) was given for twice daily use at home. The 25 per cent. or stronger solutions should be reserved for the physician's use, and the applications made carefully and only as frequently as necessity demands, since it is likely to prove very irritating if applied too generously or too often. Ulcerations on the septum or turbinated bodies—particularly the former—responded promptly to the use of the pure drug. After thorough cleansing, applications were made only to the ulcerating points, which soon showed a tendency to heal more rapidly than is ordinarily the case after the application of ichthyol, iodoform, silver nitrate, and other applications that have been used.

In atrophic rhinitis the most brilliant results were obtained. In many cases where no previous treatment had been employed, immediate benefit was obtained by the use of the 25 per cent. solution on the atrophied turbinates, accompanied by the application of a 1 to 2 per cent. creamy solution of the drug by the patient. In several other cases where the long-continued use of iodine preparations and ichthyol in all strengths had been of little avail, the substitution of ortho-

chlorphenol treatment rapidly induced a more moist and puffy condition of the nasal mucous membrane, the crusts became fewer and less tenacious, and the post-nasal accumulation lessened.

It has also been noticed recently in cases of chronic nasopharyngitis where the post-nasal secretion was excessive, that one or two applications of the 25 per cent. solution to the naso-pharynx caused a marked diminution of the disagreeable dropping and hawking. In the earliest experiments with this drug, it was used full strength in applications to all parts of the nasal and pharyngeal mucous membrane, but the extreme pain that followed, particularly after its use in the nose where the frontal pain and lachrymation were intense for hours after, led to the substitution of the 25 per cent. solution. The pure drug is now applied only to ulcerating points. The 25 per cent. solution is thoroughly wiped over the atrophic membrane and though considerable pain and lachrymation occasionally occur, these pass away even in the most sensitive subjects within an hour.

It may be well to state that in these cases of atrophic rhinitis, no constitutional treatment was employed, except in two cases where the anæmia was so marked as to indicate the immediate use of iron and arsenic. In conclusion, we may state that our experience with orthochlorphenol in the class of cases mentioned has been most satisfactory and gratifying. As yet we have not used the drug in the larynx.

To Messrs. Merck, McKesson and Robbins, Lehn and Fink, Schering and Glatz and Schieffelin & Co. are due our thanks for kindly furnishing us with many of the new drugs employed.

SOME CLINICAL NOTES AND OBSERVATIONS ON
SIX CASES REFERRED TO THE NERVOUS DE-
PARTMENT OF THE MANHATTAN EYE AND
EAR HOSPITAL.

J. ARTHUR BOOTH, M.D.

THE following cases have been thought worthy of record in the Journal as presenting features of interest, not only to the neurologist, but also to those interested in diseases of the eye, ear, throat, and nose; and in illustration of the close relationship existing between these diseases and those of the nervous system.



FIG. 1.

CASE 1.—Laura,—43 years of age. Married. (Ophthalmoplegia Externa and Interna *Period.* Pseudo-Tabes.) Referred by Dr. Webster, April 16, 1893.

The general health of the patient has never been good and for the past eighteen months she has had attacks of migraine, occurring two or three times a month ; the pain being occipito-orbital, accompanied by nausea and vomiting. This pain usually developed in the early morning hours, arousing her from sleep and lasting all day. The attacks are on either side but much more frequent and severe on the left ; sometimes through both temples deep in the orbits. In November, 1892 (three years ago) she saw double and gradually developed ptosis on the right side, which has remained nearly complete. Lately



FIG. 2.

she has been troubled with dizzy sensations and a staggering gait, or as she expresses it, "I take up more than my share of the sidewalk." She has been married fifteen years : no children and no miscarriages. She denies osseous pains, eruptions, ulcerated sore throat, nor can any history suspicious of a specific infection be obtained. There is no history of a fall or blow of any kind.

Examination reveals nearly complete ptosis of the right eye. With the left open, she can raise the right lid so as to reach the lower edge of the pupil. With left eye closed she can

raise the lid so as to clear the pupil wholly. There is no action in the rectus internus ; the rectus superior acts a little and the rectus inferior fairly well. There is also a slight ptosis of the left eye, with paresis of the internal rectus. The accompanying photographs illustrate the conditions (Fig. 1), on trying to open the eyes voluntarily, and (Fig. 2) with the lids held open.

The pupils are apparently equal and of medium size in daylight, but in the dark room the right is larger than the left by about one millimetre, and neither react to the strongest illumination. The patient does not give any history of sharp or fulgurating pains in the legs, but states that the right foot and leg, also the right arm, go to sleep severely on the slightest provocation ; sitting a short time or any lying on the right arm will cause this numbness. In bed her right arm and fingers are often dead and like sticks. The same symptoms occur on the left side but to a lesser degree. No knee-jerks can be obtained even with reinforcement. Her equilibrium is poor, and in attempting to stand she staggers, and a tendency to fall backward occurs. The grasp of the hands is about equal. The optic nerves are perfectly normal, there being no signs of neuritis or atrophy. The bladder is irritable and she is compelled to rise eight or nine times at night to urinate.

Remarks.—Paralysis or weakening of some of the ocular muscles in tabes dorsalis is of common occurrence, but the involvement of both third nerves, to the extent shown in the above case, is rarely met with in this disease. All cases, presenting symptoms of ophthalmoplegia, possess many important and interesting points for investigation as to whether the lesion be nuclear or one involving the main trunk of the nerve.

Much time and study have been devoted to the study of this nucleus, and it is generally considered to be made up of seven distinct groups of cells, some at the base of the third ventricle, others in the aqueduct of Sylvius. When the trunk itself is involved, all the muscles supplied by the nerve are apt to be affected, and, on the other hand, if the morbid process is of the nucleus, covering, as it does, such a wide area, only a few of the muscles are paretic. In the case just recorded there is a degeneration of the nerve nuclei associated with tabes of an irregular type, and this conclusion is a satisfactory explanation if we consider, not only the single phenomenon, but the com-

mencement, the development of the disease, and the symptoms all together.

In this and all parietic affections of the third nerve, syphilis bears an important causative relation, even without a definite history of infection. The results of recent investigation certainly support this view and seem to show that this specific virus prepares the system for these degenerative changes, even if it does not act primarily as the active agent.

A characteristic feature of brain syphilis is the striking



FIG. 3.

variability of the symptoms, and every possible disease of the brain and cord may be simulated, as may be illustrated by the two following cases :

CASE 2.—Frank G, 28 years old, single, machinist. (Ophthalmoplegia External-Bilateral Ptosis.) Referred by Dr. Blodgett.

There is nothing of importance in the family history. His general health has always been good and he gives no history of any illness up to two years ago. At that time he contracted a chancre which was followed by falling of the hair and eruptions

on different parts of the body. Six months ago he began to suffer with headaches. This head pain was constant, generally of a dull character, but at times severe, especially at night. Two months ago, he first noticed a drooping of the upper lid of the right eye and two months later the left eye became affected in the same manner. His vision has remained good and he has not had any symptoms of diplopia. Careful questioning does not bring forth any other subjective symptoms.

Examination reveals a condition of nearly complete ptosis of both eyes, causing a peculiar sleepy expression of the face (Fig. 3). There is no involvement of any of the other ocular muscles and the fundus of each eye is normal. Both pupils react to light and accommodation. The knee-jerks are normal. There is no ataxia and the equilibrium is perfect.

Treatment.—The patient was ordered mercurial inunctions and kali iodide in increasing doses. There has been a complete cessation of the headache, and he can now open the left eye naturally, but the right still remains in the same condition.

CASE 3.—Charles B, aged 36, married, painter. (Intracranial Syphilis. Optic Neuritis with Hemorrhages. Epileptoid Attacks.) Referred by Dr. Seguin, November 8, 1893.

The patient cannot express himself intelligently, and the following account of his case is given by his wife. In the latter part of December, 1892, he had a peculiar attack, consisting in his leaving his work in a new building, laughing and running home in a crazy way; at home he was relaxed but delirious. He had an attack of relaxation and loss of consciousness in his chair on reaching home and slept heavily all night. The next morning he did not seem right—did not know where he was and insisted on going to work. He left home but could not find the place, and returned dazed in two hours. Was dazed and very sleepy most of the time for three or four days; then he seemed nearly well for a few days, but early in January he began to complain of diplopia and dimness of vision.

The convulsive attacks continued at intervals and he began to complain of headache, bitemporal and over vertex. Vomiting in the morning was also a prominent symptom, and this occurred several times a week. Lately he has had a great deal of vertigo and a staggering gait, bilateral as if drunk; also backward. The last attack occurred in a car, two weeks ago, and commenced by a jerking of the right shoulder and arm, legs extended and stiff; unconscious but not in the way of coma. The right arm and shoulder had these clonic spasms for three minutes. This morning in bed had a similar attack, limited to the right arm and shoulder.

After the last attack, two weeks ago, his speech became gradually heavy and slow, and now only a few partial sounds can be understood by his wife.

Examination.—The pupils are about equal in medium light: in a bright light the right responds slightly and slowly, and the left not at all. The same result is obtained to concentrated mirror light. Both eyes are divergent, there being almost no convergent power. Either eye alone can be moved in every direction; but not fully inward; both interni are therefore weak. The eyes are wide open, staring, somewhat prominent,



FIG 4.

presenting the same form seen in Basedow's disease. This peculiar appearance is well shown in the accompanying photograph (Fig. 4). His vision is very much reduced, only able to count fingers at ten inches. No hemianopsia. The ophthalmoscope shows a typical choked disc on both sides. Above the right disc is quite a large hemorrhagic patch and towards the nasal side are numerous round spaces of blood. In the left eye a patch of hemorrhage exists a little to the temporal side of the disc.

There is no trace of hemiparesis, though both sides of body seem weak. No facial or lingual deviation or inaction is made out. Grasp of hands: R. 30-35 L. 30-26. Sensation is

normal. The knee-jerks are greatly raised but equal. He is unsteady on his feet, and with eyes closed his equilibrium is poor, the tendency being to fall backward.

The patient confesses to a syphilitic infection ten years ago. His wife has had two miscarriages (not provoked), and two children survive, both in poor health and having notched teeth.

The patient was ordered increasing doses of kali iodide and hydrarg-oleate 10 per cent. by inunction.

November 20th.—Marked improvement: no attacks of convulsions. No vomiting for five days, and he has but little head pain. He reports that his vision is worse, but examination shows that he can now count fingers at ten feet. There is no lateral limitation of the fields. There is less staring and much more expression appears in the face. He converses more and answers much more quickly. He is now taking about 75 grains of the iodide three times, daily. Inunctions continued.

December 4th.—Very greatly improved: smiles naturally and moves pretty quickly. No convulsive attacks, counts fingers easily with either eye. The miliary hemorrhages have about disappeared. He is now up to 150 drops of the iodide solution, taking this dose three times a day.

January 3, 1894.—Improvement continues. Vision now so good that he goes out alone and acts perfectly natural in every way. He has had two attacks of local spasm, without loss of consciousness, limited to both sides of the face, lasting about twenty minutes.

October 15th.—No spasmodic or unconscious attack since June 11th. Has been at work for three weeks painting in the open air. Has had some six or eight headaches, always accompanied by redness of the face.

Mercury and kali iodide have been continued off and on since last note.

December 19th.—Patient entirely restored. Vision almost completely regained. Reads with either eye, at 12 inches No. 3. and No. 4. Jaeger. Vision in left eye a little dimmer but spells words in No. 4. correctly. Can tell red, blue, yellow, and green at once. There is no paresis, and the mental condition is good. The left eye is in partial external strabismus; all muscles act well however. Pupils equal, slow and slight reaction to light.

Fundus shows no remains of hemorrhages. The right disc is cup-shaped, creamy white, and the retinal vessels of fair size with good proportion between veins and arteries.

February 10, 1896. The patient remains well. He reports no attacks of any kind, and says he has not been troubled with

headache or any of the former symptoms. He has been at work at intervals, but has been unable to obtain steady employment.

Remarks.—From the history, the multiplicity of the symptoms, and the result of treatment, no one would hesitate in arriving at the correct diagnosis and attributing to syphilis the cause of this man's symptoms. The meninges, cortex, base, and blood-vessels of the brain were all involved, and the case illustrates how, under suitable treatment, apparently impossible recoveries are sometimes effected.

CASE 4, Nellie C—, aged 17, single. (Graves's Disease, Œdema of the Lids without Exophthalmos.) Referred by Dr. Giles, November 5, 1895. When six years old, her sister, taking her by the arms, made a pretence of throwing the patient out of a window; she was much frightened, and an attack of what was called brain fever followed, causing confinement in bed for several months, and during this time she had several convulsions. She finally made a good recovery, remaining well until the appearance of menstruation six years later. About this time, when twelve years old, a swelling of the upper lids of both eyes appeared, which has gradually increased and now has become very noticeable. She complains of frequent attacks of palpitation of the heart, accompanied by throbbing in the vessels of the neck and profuse perspiration; also of general nervousness and occasional headache. She has never noticed any prominence of the eyes or throat, nor has there been any swelling of the hands or feet.

Examination.—Appearance that of a case of Graves's disease. When we examine the eyes, however, no exophthalmos is discovered, but instead a very marked and peculiar œdema of the lids (Fig. 5). It is not a true œdema; no pitting follows pressure, and it does not cause closure of the lids, which is produced by ordinary œdema. Movements of the eyes and lids are harmonious. On inspection, there is no decided prominence of the thyroid, but on palpation, swelling and a diffused hardness of both lobes of this gland is made out. The pulse varies between 110 and 120 beats per minute. The face, neck, and both hands are covered with beads of perspiration. No tremor of the hands is noticed. Repeated examination of the urine does not show any evidences of kidney trouble.

Remarks.—The lids of the eyes generally present two symptoms of quite common occurrence in this disease. The first,

known as Von Graefe's symptom, consists in the inability of the lid to follow the downward movement of the eyeball. The second, known as Stellwag's symptom, is a marked retraction of the upper lid, rarely the lower one. Œdema of the lids, however, is very uncommon, and a careful perusal of the histories reported in American literature does not reveal a single case with this symptom. On the other side, however, it has been described by Parinaud, Gowers, Mackenzie, and Vigou-roux, the latter of whom ascribes it to paresis of the orbicularis,



FIG. 5.

and states that when contraction of this muscle is affected by an electric current the swelling disappears, driven back by the pressure of the subcutaneous fascia. Another interesting feature of this case was the apparent absence of exophthalmos.

CASE 5.—Edward M., 38 years old, bartender. (Acromegaly with Laryngeal and Pharyngeal Symptoms.) Referred by Dr. Chappell November 29, 1895. He had always been a hard drinker up to four years ago, but since then he has been

abstemious. He formerly smoked to excess but lately only in moderation. He denies having had a chancre or any venereal disease, and no symptoms pointing to a syphilitic infection can be elicited. There is no history of any serious illness, nor has he received a fall or blow of any kind. The family history is negative. Seventeen years ago while working on a canal boat he had an attack of numbness of both hands, and a few days later noticed that his hands and arms were weak. This condition lasted two weeks and then gradually passed off. These symptoms were probably due to neuritis, caused by the excessive use of liquor. He remained well until four years ago, when he began to have difficulty in breathing, accompanied by change of voice and severe pain in the back part of the head. This dyspnœa occurred in what he calls "attacks of asthma"; worse at night and during the winter months, but at no time has it disappeared entirely since the onset. The headache became more severe and constant, and one month ago the dyspnœa became so troublesome that he could not sleep at night. Within the past year he has noticed that his hands were larger, heavier, and that he was awkward in the use of his fingers. The nails have become smaller and very brittle. He is now more round-shouldered than formerly, and there is a tendency of the head to fall forward. His facial expression has also changed. The above symptoms have also been noticed by a brother, who confirms the above statements. There have been no symptoms referable to the lower extremities. He has had several dizzy attacks, and this morning, while standing looking across the street, he suddenly felt dizzy and would have fallen if he had not caught hold of a railing for support. The duration of this attack was about five minutes and unaccompanied by any nausea or vomiting. His memory has become very poor, so that now he has difficulty in recalling events a half hour after their occurrence. Vision, hearing, taste, and smell are all normal. The bladder is irritable, urine scanty and high-colored, but negative as to albumen, sugar, and casts.

Examination.—The patient is five feet five inches in height, and weighs about one hundred and ninety pounds. The respiration is embarrassed, the dyspnœa being very marked and with some stridor. He coughs at intervals, and this has a metallic sound. There is some expectoration in the morning, but not during the day. The voice has a nasal sound, but there is no aphonia. The tongue is very large, heavy-looking, and evidently much wider than normal. It is protruded in a straight line, and there is no evident paralysis. Both tonsils are hypertrophied, as is also the palate and uvula, the latter

only moving to a slight degree on phonation. Dr. Chappell makes the following report concerning the condition of the larynx : A thickened condition of the vocal cords, without congestion and in a state of adduction. The opening between the vocal cords is very small. While the patient remains quiet respiration is only slightly impaired, but excitement produces labored breathing and a crowing sound during both expiration and inspiration. The arytenoid cartilages and the ventricular bands, also the epiglottis, are much hypertrophied.

Both lobes of the ears and *alæ nasi* seem unnaturally large and prominent, as also the superciliary ridges. There is no paralysis of the face or ocular muscles. The pupils are mode-



FIG. 6.

rately dilated and react to both accommodation and light ; the fundus is normal. Standing on both legs, with eyes closed, the equilibrium is good, but he is unable to stand on either leg alone without falling. The knee-jerks are equal but rather low. There is no ataxia. Both hands (Fig. 6) and wrists are very large, and this increase in size seems to be of all the tissue—bones, connective tissue, and skin ; the muscles, however, do not seem hypertrophied. The width and thickness of the fingers are very great, and almost as large at their tips as at their base. The nails are small in comparison with the size of the corresponding fingers, and many of them are cracked and split. The following are some of the measurements :

RIGHT HAND AND ARM.

	Circumference
Three inches above styloid process of ulna.....	9 inches
Wrist, over styloid process of ulna.....	8 $\frac{1}{4}$ "
Dorsum of hand—fingers extended naturally.....	9 $\frac{1}{4}$ "
Index finger, first phalanx.....	3 $\frac{1}{4}$ "
" " second "	3 $\frac{1}{4}$ "
" " third "	3 $\frac{1}{4}$ "
Length of finger, 3 $\frac{1}{2}$ inches.	
Middle finger, first phalanx.....	3 $\frac{1}{4}$ "
" " second "	3 "
" " third "	3 "
Length of finger, 3 $\frac{1}{2}$ inches.	
Third finger, first phalanx.....	3 "
" " second "	2 $\frac{3}{4}$ "
" " third "	2 $\frac{3}{4}$ "
Length of finger, 3 $\frac{1}{4}$ inches.	
Little finger, first phalanx.....	3 "
" " second "	2 $\frac{1}{4}$ "
" " third "	2 $\frac{1}{4}$ "
Length of finger, 2 $\frac{1}{2}$ inches.	
Thumb, first phalanx.....	3 $\frac{1}{4}$ "
" second "	3 $\frac{1}{4}$ "
Length of thumb, 2 $\frac{1}{4}$ inches.	

Measurements of the left hand were also made, but as the results were the same as the above, they are not given.

The grasp of the hands, as indicated by the dynamometer, is : right, 25-24-22 ; left, 26-25-24.

The patient being stripped, an inspection of the chest reveals a distinct difference in the size and appearance of the two sides of the chest ; the right pectoral region being prominent and firm and the left retracted and flabby. The heart is slightly hypertrophied and labored in its action, but no murmur is present. The pulse is 100, and of very high tension, both radials being rigid. The examination of the lungs is negative. The neck is large and thick-set, without any prominence of the thyroid body. The clavicles seem larger than normal, but no marked increase in size is noticed in either the ribs, sternum, or lower extremities.

Summary.—The main points, then, in the case, briefly considered, are : A gradual increase in the size of the hands ;

hypertrophy of the palate, uvula, tonsils, and vocal cords, prominence of the ridges of the frontal bone ; the thickness of the lobes of the ears and alæ of the nose ; the constant and severe occipital headache ; the tendency of the chin to project downward and forward ; the blank and expressionless appearance of the face, though the patient was suffering from head pain and dyspnœa ; the condition of the heart and radial arteries ; finally, decided loss of memory, with change in character.

Contemplating the above subjective and objective symptoms, justified me thinking the case to be one of acromegaly.

Two weeks after his first visit to the clinic, he had an attack of dyspnœa more severe than usual, and was found dead in his bed. Unfortunately an autopsy could not be obtained.

CASE 6.—Annie S., aged 22 ; married. Recurrent Mydriasis. Treatment by Hypnotic Suggestion. Referred by Drs. Webster and Howe, June 27, 1895. With the exception of an attack of inflammatory rheumatism when 14 years old, she has never had any serious illness. She has been married five years, but has never become pregnant ; has been treated for the past nine months for prolapsus uteri. There is no history of a fall or blow of any kind, nor any symptom complex pointing to a syphilitic infection. During the past year she has become very nervous, depressed, and hysterical ; and twice has had epileptoid attacks of a hysterical nature. The eye symptoms commenced one month ago, and consisted in an inability to read or see very well with the right eye. She then discovered that the right pupil was much larger than the left. Lately there has been some pain in and around the eye and sensitiveness to bright light. Her appearance is that of health, with the exception of paleness of the lips and conjunctivæ. Vision : right, $\frac{1}{2}$; left, $\frac{1}{4}$. The right pupil is dilated, and reacts to accommodation, but not to light. The left pupil is of normal size and reacts to both light and accommodation. The optic nerves are normal.

Proper glasses and the internal use of kali iodide did not relieve the conditions present. It was decided that the symptoms were entirely hysterical. Hypnotism was tried. She responded well to suggestion ; improvement was noticed after the first seance, and after the fifth she was entirely cured, both pupils being of normal size, reacting to light and accommodation, the pain also having disappeared.

On February 27, 1896, she returned, complaining of the same symptoms, but now in the left eye.

Examination revealed a condition of mydriasis of the left eye, with but a slight reaction to either light or accommodation. Vision, $\frac{2}{8}$ in the right eye, and $\frac{3}{8}$ in the left.

She was hypnotized in the presence of Drs. Webster, Howe, Lynch, and others, and suggestion made proper to the conditions present.

Immediately after the seance, the eyes were again tested with the following result : right eye, $\frac{2}{8}$; left, $\frac{3}{8}$, there being but a slight difference in the size of the pupils.

The treatment by hypnotic suggestion was continued, and on March 13th the patient reported entire absence of pain and any ocular annoyance, and an examination did not reveal any enlargement of the pupil.

Remarks.—There are a certain number of cases, of which this is a good illustration, presenting obscure ocular symptoms which are not relieved by either glasses or internal medication, but who are cured by the use of hypnotic suggestion. It would seem, therefore, that the use of hypnotism in these hysterical manifestations was perfectly justifiable and worthy of further trial by those interested enough to look into the subject.

A CASE OF IDIOPATHIC TETANUS.

T. R. CARTER, M.D.

CASES of idiopathic tetanus being comparatively of rare occurrence, the following case may prove of interest not alone for its rare occurrence but for its slow development, lack of convulsive seizures, and for an apparently hysterical element. The history of the case is as follows :

April 2d.—Willie G.—, age 8 years, parents strong and healthy, child vigorous from birth, never having sustained any injury of either a slight or serious nature. About six days previous—the child being in good general health, playing as usual, also attending school—the parents noticed his mouth drawn to one side. Two days later the eye on this side grew smaller as they expressed it, the child now becoming fretful and emotional the following morning he was unable to open his mouth more than a quarter of an inch. The parents thinking the eyes caused the condition took him to an oculist who pronounced his eyes normal and referred him to me about one week after appearance of first symptoms.

Examination : General condition good, facial muscles present a peculiar spastic state, mouth drawn to right side, right eye partially closed, slight retraction of head, sensation of stiffness in neck and face, unable to separate jaws more than a quarter of an inch, efforts to open the mouth caused a decided spasm of the muscles of the jaw attended with pain. Muscles of trunk and limbs normal. Grasp and reflexes normal, tongue slightly coated, bowels fair ; lungs, heart, and urine normal ; no induration around jaws, no evidence of wound or scar, child free from pain. Diagnosis doubtful. Treatment expectant.

April 9th.—Appearance about the same, tongue badly coated, complete anorexia and loss of strength, urine normal. The child was again undressed and carefully examined with negative result.

April 13th.—Looking decidedly worse, irritable, refuses food, complains of pain in the back between the scapulæ ; walks with shoulders drawn forward, body slightly bent in same direction, some slight evidence of tension in thoracic

muscles, sleeps poorly. Mother says he now wakens at night after a short sleep and runs about the room screaming, stopping only when exhausted, and if held he struggles to get away.

April 14th.—Taken to Manhattan Eye and Ear Hospital when Dr. Seguin examined him with me. Just prior to his coming to the hospital the child had walked a mile to the train, and was heated, tired, and fretful on reaching there. He was stripped and then for the first time the elements for a complete diagnosis were obtained. In addition to the trismus and the peculiar spastic state of the facial muscles on both sides, producing a well marked and very singular (because of apparent smallness of the eyes) risus sardonicus—it was seen that the muscles of the shoulders, back, and abdomen were all contracted, many of them standing out hard and well defined like those on an athlete. The muscles of the lower extremities were apparently not affected. There was marked perspiration over the entire body and face. The child's face had a strange old look expressive of anxiety and suffering though he denied having pain. The diagnosis of tetanus was made and a renewed investigation as to evidence or history of external injury resulted negatively. I might say that the child when first seen by me was undressed and given a thorough cleansing from head to foot, then examined carefully from scalp to fingers and toes in search of wound or scar but with negative result; careful questioning of both mother and child likewise elicited only negative replies.

April 15th.—Ordered chloral gr. v every three hours, perfect quiet in bed, room darkened, nourishing liquid diet. Attempts to feed generally produced a slight spasm but not sufficiently severe to necessitate feeding with tube.

April 17th.—Chloral increased to gr. x every three hours, pain in back less severe, more quiet the past two nights.

April 19th.—Again screaming and running about the room at night, at which time his mother was advised to pay no attention to him and notice effect. Quiet during the day. Expresses a little more desire for food. Ordered nightly dose of chloral gr. xv.

April 22d.—More drowsy but never sleeps during day. Perspiring profusely. Nightly attacks of screaming and running continue. Complains of pain in right shoulder. Very irritable. Ordered chloral gr. x and fluid extract of conium drops x every three hours day and night in alternating doses, except when sleeping.

April 30th.—Growing gradually weaker. Now taking ninety (90) drops of conium and about 50 gr. of chloral in twenty-

four hours. The thighs and legs are now becoming affected—rigid. The muscles not prominent, but hard and tense.

May 7th.—Condition as above. Now taking conium, 120 drops, chloral gr. L (50) in the twenty-four hours. During the day the child was suddenly seized with what his mother called a choking fit. When I saw him half an hour later he was as well as usual. Heart normal.

May 8th.—During the night the child suddenly jumped out of bed and ran to his mother, struggling for breath. The attack was similar to that occurring in the afternoon. A few moments later the child was dead.

Diagnosis. Idiopathic tetanus.

Cause of death was probably spasm of glottis. Permission to make an autopsy was refused.

The duration of the disease was seven to eight weeks. During this time the temperature was never over 99° F. At no time were there any convulsive seizures. The appearance of child when spasm was at its height was one of pain, with an anxious expression, the face looking old, the voice husky, forehead wrinkled, brows contracted, eyes partially closed, grin marked, body bent forward, thighs and legs rigid, walking evidently a painful effort, the legs being dragged after the body. No opisthotonus, but a well-marked tonic rigidity of the cervical, thoracic, and abdominal muscles, which stood out almost separately. The face and body bathed in profuse perspiration.

As to the attacks of running and screaming which occurred only at night and never during the day, it is a question whether they were due to delirium or to restlessness—the child taking this means of seeking relief from his suffering,—or whether they were of a purely hysterical nature. I was never so fortunate as to see the child during one of these attacks, but I myself think the second explanation the best.

During the past six or seven years there have been reported only some half dozen cases of idiopathic tetanus, and to these some cause was ascribed, *i. e.*, one to drinking ice-water when over-heated; another, to lying on the damp ground immediately after violent exercise; another to rheumatism; still another to chronic ulcer, while in the present case no such cause could be discovered or any other which had the slightest

bearing on the case. I would say in conclusion that we have to take into consideration the fact that many cases of idiopathic tetanus—so-called—may be of traumatic origin in spite of the fact that we can neither find nor learn of any injury, as a child may and is apt to receive an internal wound of so slight a nature as to escape notice, *e. g.*, ear, nose, mouth, rectum, et cetera.

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ASTHENOPIA AS A FORERUNNER OF NEURASTHENIA.

D. B. ST. JOHN ROOSA, M.D., LL.D.

IT has long been known that the inability to use the eyes on near objects, without discomfort, is one of the early symptoms of locomotor ataxia. This form of asthenopia is easily recognized, if attention has once been turned to it. It depends upon irregularities in the action of the external muscles of the eye, and these, in turn, are dependent upon the general muscular weakness, which is one of the early symptoms of the disease. I desire to carefully distinguish what I am about to say, from a discussion of the asthenopia, or, better said, the weakness of the external muscles of the eye, characteristic of grave disease of the spinal cord. I mean a well-defined asthenopia, entirely different from the paresis of locomotor ataxia—one that has all the subjective symptoms of true asthenopia, but which lacks one essential part of this condition.

The patients who are unable to use their eyes upon fine and near work, such as reading, writing, sewing, and the like, without ocular discomfort, are, in large proportion, found to have a positive error in the refraction, such as a considerable degree of hypermetropia or astigmatism, or both. On correction of this, the asthenopia is almost invariably relieved. But in the cases I am now classifying, there is no considerable error of refraction. None, at least, that of itself produces asthenopia. The greater part of the human race which is not myopic, is hypermetropic. It cannot be said that a low degree of hypermetropia is, of itself, a sufficient cause of asthenopia. Just so with corneal astigmatism. Unless it reaches a diopter with the rule, or a quarter of a diopter against the rule, it does not, of itself, produce asthenopia. In addition to hypermetropia and astigmatism, presbyopia, and a considerable degree of astigma-

tism occurring in conjunction with it, is very often a source of true asthenopia in early middle life.

But there is quite a class of people with asthenopia who consult an oculist who have, as to their refraction, a normal eye,—at any rate, an eye which has no intrinsic conditions which may cause weak sight.

The cases of which I am about to write must not be confounded with those seen by every ophthalmic practitioner, where, although there is need for glasses, and they are properly fitted, the patients are still not able to work, without asthenopia. In these instances, asthenopia occurs simply because the subjects of it are using their eyes beyond the capacity of the eyes themselves, or of their nervous or muscular system, or both. This is true asthenopia complicated with a neurotic or debilitated constitution. While writing this article, I received a letter from a presbyopic patient, who has suffered from neurasthenia for some years, and who is adequately provided with glasses, but who cannot use her eyes as fully as she desires, in poring over volumes pertaining to a subject in which she is greatly interested, from morning till night, to the neglect of all proper open-air life. She asks for an eye wash that will enable her to do what she wishes to accomplish, or else she desires her glasses changed. With such cases as these we are all perfectly familiar. I am writing of people who, clearly, do not need any glasses whatever, and who, yet, cannot use their eyes.

Given a normal refraction in the two eyes, there can be no such thing as want of muscular equilibrium, except in cases of paresis. The irregular action of the muscles in locomotor ataxia, is not to be classified with the so-called "muscular insufficiencies." It is a weakness of all the muscles, and varies from day to day. It is a very different thing from the weakness of the interni, seen in myopia, which is almost an invariable accompaniment of a high degree of that error of refraction.

When a patient comes to me having normal vision, a low degree of hypermetropia—that is to say, hypermetropia from one to three diopters, and either no astigmatism at all, or half a diopter with the rule, I conclude that there must be something besides the eye which is at fault, in the production of the asthen-

opia. Repeatedly I have found this condition of things to be the premonition of neurasthenia, or general nervous break-down. To give such patients glasses is, at the best, to give them a *placebo*. The result of such a prescription is sometimes disastrous, since it veils the true condition, and encourages them to continue to think of their eyes as the cause of all their troubles. We should be inflexible in our exact conformity to the principles laid down so clearly by the results of ophthalmoscopic and ophthalmometric investigation, and not prescribe glasses for those people in whose cases there are no scientific indications for their use. There is an idea prevalent in the mind of some general practitioners, and, I fear, also, in that of some ophthalmologists, that there is virtue in a convex spherical glass, of a low degree—in resting the eyes for distant vision, although the vision is perfect without it, and is, at the best, made a little less distinct with it. In my judgment, no one is ever the better for glasses, unless he or she sees better with them, or is much more comfortable with them. In the latter case, when the vision is not improved, there is usually facultative hypermetropia or a low degree of astigmatism, and the patient will see as well at a distance with the glasses as without them. Even then, when the vision for the distance is perfect, I do not urge or advise such patients to wear glasses, except for the near. Careful observation on this point is of importance in the diagnosis, and in the conditions that I am writing about, for, if an expert believes that glasses will be of service to the people when there are no positive indications in the eyeball itself for their use, he will often endeavor to do the impossible—that is, try to relieve a jaded nervous system by putting useless and troublesome lenses before the eyes.

In the early stages of neurasthenia, the eyes are sometimes indexes of how much the general system is overworked. When the examinations result negatively, or we find that there is only myopia, which very seldom is the cause of true asthenopia,—although it may be of inflammatory conditions,—which prevent the eyes from being used with comfort, then we should very carefully abstain from ordering a glass, but

endeavor, by the aid of a neurologist or general physician, to find out what really is the trouble with such a patient. A careful search into the habits and environment of daily life will often determine this. I could multiply the instances, chiefly occurring in young men and young women, for whom the whole gamut of glasses is run, in vain, by those who believe strongly in the curative value of convex, cylindric, and prismatic lenses for constitutional disease, even where no error of refraction exists, until the break-down from neurasthenia, or, in the case of women, sometimes, from uterine or ovarian disease, makes the matter plain to everyone, except to him who is possessed with the idea that the human economy revolves around the muscular action of the eye.

Malaria also produces asthenopia, and this fact, it seems to me, is also often overlooked. In New York City, it is always necessary, in obscure cases of asthenopia, to secure a history as to the previous or present existence of malaria. I have cured many cases of asthenopia with Warburg's Tincture. In view of the fact that various maladies are often erroneously ascribed to malaria, it may be well for me to say that I do not admit the diagnosis of malaria unless there is a positive history of intermittent or remittent malarial fever. In three recent cases where the asthenopic symptoms were relieved by anti-malarial treatment, two were from notoriously infected places on Long Island, and the other from Staten Island. In the latter case, excavations for building adjacent to the residence were the cause of the outbreak. I hold that, if malarial fever has once occurred in a subject, subsequent diseases are either modified by the re-appearance of the malarial parasite, or uncomplicated malarial disease may again arise. I am thus particular on the subject, because the general exaggeration in regard to the frequency of malarial disease, sometimes leads the medical observer to forget that it may crop out again, if it has once actually existed.

The point I make, in what I have been saying, is that, wherever in a case of asthenopia the refractive conditions do not clearly justify, from an optical standpoint, the prescription of a pair of glasses, they should not be advised, but

a thorough investigation of the whole train of symptoms should be undertaken. An incidental advantage in such a course is that the expert in ophthalmology will demonstrate to the general profession, that there are rules for the prescription of glasses, and show that we do not, like an optician with a customer, change from one to the other at every new ocular symptom, or upon every whim of a nervous patient. The ophthalmologist who does this is forever floundering in a bog.

The ophthalmologist may find it interesting in this connection to recall the definitions of neurasthenia, as given by the standard writers. That of Dana ¹ seems to me especially clear and comprehensive. "Neurasthenia is a morbid condition of the nervous system of which the underlying characteristics are weakness and excessive irritability." . . . "Neurasthenia," he continues, "occurs most often between the ages of eighteen and thirty." Every ophthalmic observer who will refresh his memory by turning to his case books for his unsatisfactory cases of asthenopia, will, I think, find that a majority of them belong between these years, and that some of them traced the first signs of their nervous break-down to inability to use the eyes continually.

¹ *Text-Book of Nervous Diseases*, p. 446. New York, 1892.

A CASE OF PROLAPSE OF THE RETINA FOLLOWING IRIDECTOMY FOR GLAUCOMA.

DAVID WEBSTER, M.D.

Miss Alice McL., aged 17, presented herself at my clinic at the Manhattan Eye and Ear Hospital on September 16, 1896. She said that her sight began to fail four years ago. Previously to that her eyes were normal so far as she was able to judge. She had experienced none of the usual symptoms of glaucoma except a gradual failure of vision.

R. V. = $\frac{1}{8}$; $\frac{1}{8}$ with - 2.50 D.

L. V. = perception of light.

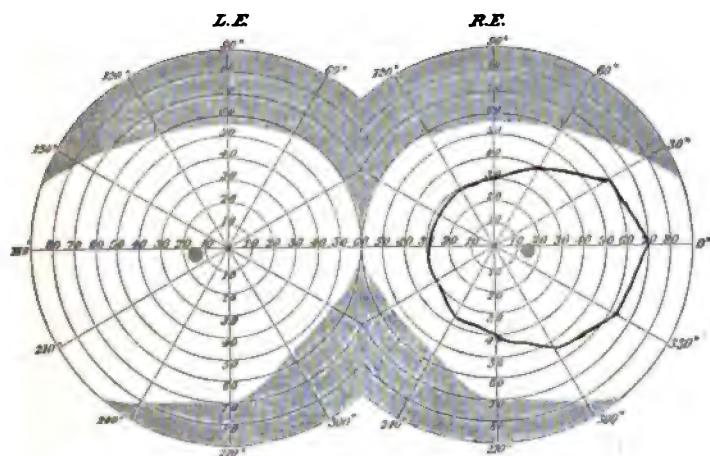
Right visual field as shown in chart No. 1.

Ophthalmoscopic examination showed total excavation of both optic disks. The bottoms of the excavations could be seen distinctly with - 4. D. The "beaking" of the retinal vessels over the edges of the optic disks was well marked, and there was the usual scleral ring, but no arterial pulsation was seen. The retinal veins seemed to be slightly enlarged; the arteries were normal, or perhaps slightly reduced in calibre. The pupils were slightly dilated, but reacted promptly to light and to accommodative effort. The anterior chambers were nearly of normal depth, possibly a little shallow. There was slight injection of the emergent ciliary blood-vessels. An iridectomy upon both eyes was advised. Meanwhile the patient was put upon the local use of pilocarpine.

September 25th.—The patient was admitted to a bed in the hospital. Cocaine was dropped into both eyes and the patient was duly prepared for a double iridectomy upwards. A clean, broad iridectomy was performed upon the left eye without difficulty. While carefully attending to the toilet of the wound, vitreous began to escape without there having been any attempt to "squeeze" the eye, or other evident cause. I immediately decided to defer the operation upon the second eye, closed both eyes, and applied absorbent cotton and a bandage. The patient passed a restless night, with a good deal of pain in the eye that had been operated upon. When I saw her the next morning (26th) I found the dressing saturated with blood. Upon washing the eyelids I found a membranous mass protruding from between them, which could not be washed away.

Upon opening the eye this membrane was seen protruding from the wound and hanging down over the cornea. The eye was inflamed, red, watery, and highly sensitive, and it was with some difficulty that I succeeded in excising the larger part of the membranous mass with scissors. This mass was examined by Dr. F. T. Reyling, one of the pathologists of the hospital, who reported that microscopic examination fully confirmed my diagnosis that it consisted of prolapsed retina.

September 27th.—Lips of wound widely separated by prolapsed retina and vitreous. Cleansed with warm solution of boric acid. Pilocarpine to be dropped into right eye every four hours.



September 29th.—Anterior chamber filled with blood. Lids slightly swollen. Pain and lachrymation considerable. Pilocarpine discontinued in right eye on account of the smallness of the pupil.

September 30th.—Lids less swollen; patient sitting up; very little pain, but some lachrymation.

October 3d.—Lids still somewhat swollen. Pain only at night. Less blood in anterior chamber.

October 8th.—Dr. Norris, the house surgeon, at my request thoroughly anæsthetized the eye with cocaine and carefully trimmed away the mass of retina and vitreous that still protruded from the wound.

October 9th.—No pain and less redness. Blood in anterior chamber undergoing absorption. Ordered smoke-glasses.

October 12th.—No blood in anterior chamber. Wound becoming smooth. Very little swelling of lids. Atrophy of the eyeball is taking place.

October 19th.—R. V. = $\frac{2}{8}$; $\frac{2}{8}$ with — 2.50 D.

October 23d.—R. V. = $\frac{2}{8}$; $\frac{2}{8}$ + with — 2.50 D.

October 24th.—Discharged, and to come as an out-patient

December 23d.—R. V. = $\frac{2}{8}$; $\frac{2}{8}$ with — 2.50 D.

Well marked *phthisis bulbi* of left eye.

It is evident that the copious hemorrhage, which caused all the trouble in this case, was from the blood-vessels of the choroid. It could have come from no other source. To make it possible that such a hemorrhage should occur, there must have been a process of degeneration going on in the walls of the choroidal vessels, rendering them less elastic and more brittle, and hence more easily ruptured. The external pressure having been removed by the sudden lessening of the tension of the eyeball, which is a necessary result of the escape of the aqueous, they were not strong enough to resist the intra-vascular pressure, which may have been increased by the more rapid beating of the heart caused by the excitement of the operation. This weakened condition of the walls of the choroidal vessels, having been so disastrously demonstrated to be present in one eye, is almost certain to exist in its fellow. A like operation upon the other eye would almost surely be attended with like results. This necessarily precludes the attempt to arrest the glaucomatous process in the other eye by iridectomy, sclerotomy, or any operative procedure involving the loss of the aqueous humor. I would have enucleated the shrunken eyeball, as a possible source of sympathetic inflammation before the patient passed from under my observation, but I feared that the administration of ether, by the flushing of the head and face which it always causes, might usher in an attack of acute glaucoma which, proving unmanageable, would leave the patient in total blindness.

I warned the patient against having any operation done upon her right eye, gave her a solution of pilocarpine to drop into it once or twice a day, and impressed upon her the necessity of consulting an eye-doctor immediately should pain, increased blurring of vision, or redness of the eye set in.

Such cases as the above are very rare. I saw only one similar case during my fifteen years' association with Dr. C. R. Agnew. Dr. H. Knapp informed me, verbally, that he had encountered no such case in his experience. When I reported this case to the New York Ophthalmological Society, Dr. F. M. Wilson of Bridgeport, Conn., appeared to be the only member present who had seen prolapse of the retina occur after iridectomy for glaucoma, and in the case which he had observed the retina was extruded at the operation and before the eye was bandaged. I am quite sure, however, that several such cases have been reported, although my research, which I admit has been less thorough than it should have been, has not enabled me to find their literature.

A CASE OF PARALYSIS OF EXTERNAL RECTUS.

J. EDWARD GILES, M.D.

M. S., age 31, came under observation on October 6, 1896. At that time there was extreme convergence of the left eye and constant diplopia. The images were united by a prism of 60°. When directed to look to the left he was able to move the left eye nearly to the median line, but not beyond. This slight amount of movement was undoubtedly accomplished by means of the oblique muscles.

R. V. = $\frac{20}{100}$ + : $\frac{20}{100}$ w. + 3. Dc. ax. 90°.

L. V. = $\frac{20}{100}$ + : $\frac{20}{100}$ w. + 3. Dc. ax. 90°.

The history of the case was as follows :

About four years previous to coming to me he began to be troubled with diplopia at intervals, and at these times his friends noticed that the left eye was turned inward. After two years of intermitting diplopia the condition became permanent and he consulted one of the leading ophthalmologists of New York, who ordered iodide of potassium in increasing doses. After following this treatment for some time and seeing no improvement in the condition, he consulted another prominent ophthalmologist, who followed the same course of treatment and ordered a ground glass to be worn over the left eye to prevent the diplopia. I could get no specific history, and as the condition had lasted so long, and particularly as constitutional treatment had been tried without result, I advised an operation, to which the patient consented. Acting upon the suggestion of Dr. Webster, I excised a portion of the internal rectus of the left eye, with the result that the eye was straightened, and has remained so ever since, although the movements are slightly restricted. There is now no diplopia except on looking to the extreme right or left. Glasses were ordered to correct the astigmatism, and these have been worn constantly since.

Aside from the successful result of the operation, the points of interest in this case are that the correctness of the diagnosis is assured not only by the history of the case, but also by the fact that the patient was seen by two gentlemen who are eminently qualified to make a diagnosis, and their course of treatment was such as to make it certain that they regarded it as a

case of paralysis, and, second, that neither of these gentlemen suggested an operation which they certainly would have done if they had regarded the case as an ordinary case of strabismus.

Dr. Webster exhibited a similar case before the Ophthalmological Section of the Academy of Medicine about a year and a half ago, in which the eye was not only straightened by the operation, but remained straight when the patient was last seen, more than a year after the operation.

That this operation of excision of a portion of the muscle will not succeed in every case is indicated by the fact that I have since operated upon a case of paralysis of the external rectus with extreme convergence in which, after excising perhaps half an inch of the muscle, there was apparently as much convergence as before, and I have been obliged to do an advancement of the external rectus. But there are doubtless many cases in which the operation of excision is worth trying, because even if it fails, the advancement of the externus can be done as well at any time afterward.

A CASE OF PERSISTENT HYALOID ARTERY.

J. EDWARD GILES, M.D.

Miss F. S., age 25, Swede, entered the Hospital on account of an impairment of vision of the left eye, which an examination showed was due to detachment of the retina. She stated that the sight of the right eye had never been good. On examining the right eye with the ophthalmoscope, the first impression was that there was also a detachment of the right retina, but a more careful examination showed that what appeared to be a detachment was a grayish-colored mass, pyramidal in shape, with the base attached to the posterior capsule of the lens at the temporal side, and probably extending to the ciliary body adjacent. Attached to this mass was a fibrous band, which could be traced back through the vitreous body to the temporal side of the disc. The retinal vessels emerged from the disc at the point at which the band joined the disc, instead of from the usual point at the centre.

The interesting feature in this case is that near the upper border of the band a vessel red in color, indicating that it was filled with arterial blood, could be traced the entire distance from the point of exit at the disc to the anterior mass above referred to; while near the lower border of the band was another red vessel, which could be traced from the same point of exit at the disc forward for perhaps a third of the length of the band, and was there lost to view, but re-appeared and continued along the anterior third of the band near its lower border forward to the mass at the posterior capsule.

Both of these vessels emerged from the disc at the same point with the *arteria centralis retinae*, and while the continuity of the lower vessel could not be demonstrated in the middle third of its course, it is probable that it was hidden in that portion by passing behind the band, or into its substance.

There appears to be no other reasonable way to account for the blood in the anterior portion of the vessel except that it was a continuation of the posterior portion, and moreover the position of the vessel was such as would be expected upon that hypothesis. There are cases on record in which there is a dichotomous division of the hyaloid artery in its course through the vitreous, and this is evidently a case in which the division occurs at the point of exit from the disc instead of more anteriorly.

A CASE OF PARALYSIS OF THE SUPERIOR OBLIQUE, FOLLOWED BY INTERSTITIAL KERATITIS.

S. M. PAYNE, M.D.

THIS case may be considered interesting for two reasons. The first is that while he was taking seventy-five drops of a saturated solution of iodide of potash, having used oleate of mercury in the beginning of the treatment, interstitial keratitis developed. The second remarkable feature is that although I made subconjunctival injections of bichloride of mercury solution (1-2000) for the keratitis, the muscle recovered some strength after each injection and its power was completely restored after the fourth injection. Two more injections cleared up the cornea entirely.

October 19, 1896.—A. C. N., age 43. Complains of double vision which came on after a severe attack of neuralgia about six weeks ago. Left eye turns upwards and inwards. Candle-flame test shows paralysis of left superior oblique only.

R. V. = $\frac{2}{3}$; $\frac{2}{3}$ W-0.50 D., ax. 90. L. V. = $\frac{2}{3}$ -; $\frac{2}{3}$ W-0.50 D., ax. 180. Ophthalmoscope shows no lesion.

Treatment.—Oleate of mercury inunctions. Iodide of potash in increasing doses. Ground glass ordered for the left eye to prevent double vision.

November 30th.—Interstitial keratitis left. L. V. $\frac{2}{3}$. Has been taking seventy-five drops saturated solution of iodide of potash three times a day for some time. Advised to leave off the iodide because he looks too pale.

December 2d.—Injected 3 minims 1-2000 solution of bichloride of mercury under the conjunctiva above the cornea.

December 4th.—L. V. = $\frac{2}{3}$ and paralysis not so marked. Injection, 3 minims 1-2000 bichloride supra-temporally from the cornea.

December 7th.—Injected 3 minims 1-2000 bichloride supra-nasally from cornea.

December 14th.—L. V. = $\frac{2}{3}$. Cornea quite clear.

December 21st.—L. V. = $\frac{2}{3}$ +. He can now move his left cornea nearly to outer canthus.

January 18, 1897.—L. V. = $\frac{3}{8}$. Injection of 2 minims 1-2000 bichloride below the cornea.

January 25th.—Cornea clear almost entirely. Movement of the left eye downwards and outwards is perfect. His eyes are now straight, and there is no movement of the left eye while covered by the hand or when the hand is removed. Red glass over one eye shows binocular single vision in any position of the eyes.

February 1st.—L. V. = $\frac{3}{8}$. He complains of slight double vision if he looks too far down and to the left.

February 15th.—His left eye is a little inflamed. There is mucous moving over the cornea and a faint opacity of the cornea. L. V. = $\frac{3}{8}$ +. Injected 2 minims 1-2000 bichloride infra-temporally from cornea.

February 24th.—L. V. = $\frac{3}{8}$ +. Injected minims 1-2000 bichloride infra-nasally from the cornea.

February 26th. R. V. = $\frac{3}{8}$ + ; L. V. = $\frac{3}{8}$ +. He says that he can see the letters with the left eye clearer than he can with the right. The cornea now looks clear, and he says that he has no further sign of double vision on looking downwards and to the left.

Two more cases of interstitial keratitis are being treated in the hospital in the same way. One old case shows slight improvement, and one new case is improving rapidly, which may be reported in the future.

A CASE OF ALCOHOLIC AMAUROSIS.

FRANK VAN FLEET, M.D.

J. S., aged 34 years, an artist by occupation, had been in the habit of going on periodical sprees, during which times he drank everything alcoholic he could lay his hands on, and then, having satisfied his appetite, he would have periods when he avoided stimulants. During his last spree, after having consumed everything within his reach that smelled of alcohol, and being unable to obtain more, he bethought himself of some dilute wood alcohol he had for use in his occupation. After finishing this, and still being unsatisfied, he sought to relieve his craving by taking capsicum dissolved in water, which, however, his stomach rejected. When completely exhausted, he fell asleep one afternoon, and, on awakening, he found himself in darkness. Groping his way from his bedroom to ascertain why the gas had not been lighted, he was told it was still early in the day, and still light. He sent for his family physician, who treated him for two weeks without benefit.

Admitted June 9, 1896. Never had syphilis, nor, indeed, any previous sickness.

Status Præsens (two weeks after onset of blindness) : Pupils widely dilated ; no reaction to light, nor, as nearly as can be ascertained, to accommodation.

Ophthalmoscope—Reveals apparently normal fundus. Vision = 0.

Dr. Terriberry reports no evidence of disease of nervous system.

Diagnosis.—Alcoholic amaurosis.

Treatment.—Strychnia sulphate, grain one sixtieth, hypodermatically, once a day, increased one sixtieth daily until physiological effects are produced.

June 14th.—Nerves begin to look very white ; condition otherwise unchanged. Taking one twelfth of a grain of strychnia once a day ; ordered that injections be given twice a day.

June 18th.—Injections have reached one quarter of a grain night and morning. To-day for the first time patient had momentary vision, enabling him to distinguish between a person dressed in light clothes and one in dark ; distinctly sees attendant in white apron. Patient has said for several days that

on arising from bed in the morning he could see large objects, but we have never been able to demonstrate, until to-day, that he had even perception of light.

Nerves very white, and blood-vessels have flattened appearance : no reaction of pupil can be detected.

June 19th.—Counts fingers at one foot.

June 25th.—Counts fingers at three feet ; receiving strychnia, twenty-six sixtieths twice daily.

July 1st.—Strychnia injections have now reached two thirds of a grain twice a day. Marked hyperæsthesia of skin and twitching of muscles short time after an injection of this strength ; if patient is touched within an hour after injection, however lightly, on any part of the body, as touching his arm with one's finger, will cause him to jump and laugh hysterically. The symptoms were so pronounced it was thought best to decrease dose of drug. It was reduced to thirty-five sixtieths, with the result that vision began to diminish at once.

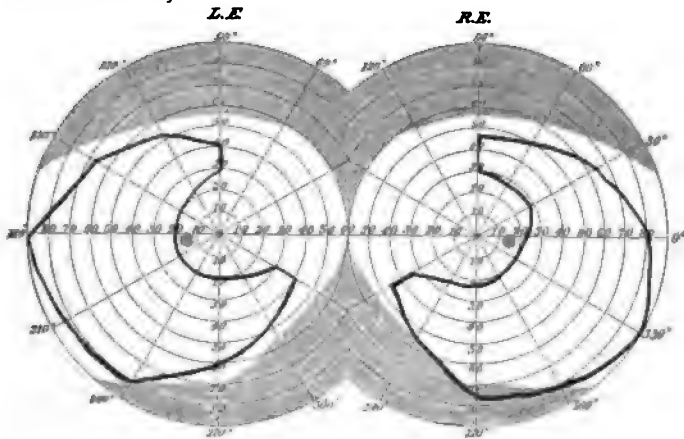
July 13th.—Injections again increased to forty minims twice a day, without retarding the progressively failing sight.

August 10th.—Vision growing less daily, and on November 10th note is made that there is not even perception of light ; pupils widely dilated, and ophthalmoscopic picture that of complete atrophy.

This case is interesting in these particulars : The condition presented itself as a suppression of vitality, amounting, in fact to death of the optic nerves. There remained of the fibres of the nerves a few that could be stimulated into activity by large and continued doses of strychnia, but, to maintain this amount of activity, required doses which were really dangerous to the life of the patient. From absolute blindness, vision returned under this stimulant, and gradually increased, until it became necessary because of the constitutional symptoms produced, to diminish the dosage, when immediately vision began to fail, and progressively decreased until blindness again supervened ; nor was a return to the original dose sufficient to again arouse the failing life of the nerves. The fields of vision were peculiar, assuming the form of binasal hemianopsia—*i. e.*, the nasal fields wanting ; showing that a corresponding section of each nerve retained sufficient vitality to respond to the stimulant. The color fields, with the exception of being smaller, were identical with the light fields. The ophthalmoscopic picture at the end was atrophy.

Another interesting feature was the tolerance of very large doses of strychnia : two thirds of a grain being given twice a day for a long time. Following what I believe to be the usual method, we began with minim doses of a solution of strychnia

sulphate, one grain to the drachm,—each minim representing one-sixtieth of a grain of the drug—increasing one minim a day until tolerance was reached. In this patient forty minims were given, finally, morning and evening, or one and one third grains per day. The general effect of this extreme treatment was to make the patient stouter and stronger than he had been in a long time, but the effect on vision was simply to arouse the flickering flame which speedily died out when the amount of the stimulant was reduced ; nor was a return to the large dose sufficient to bring about a reaction. I have wondered whether this might not be so in most of the cases of progressive optic-nerve atrophy, from other causes, where we frequently find such gratifying results follow the subcutaneous injections of strychnia : whether the effect may not be merely transient. It would be interesting to know. I append the patient's fields at the time when his vision had attained its maximum acuity.



REPORT OF A CASE OF OPHTHALMIA NEONATORUM WITH CORNEAL COMPLICATION OF AN UNUSUAL CHARACTER, ENDING IN RESOLUTION.

A. B. DEYNARD, M.D.

Was called July 4th by Dr. W. S. McMurdy to see an infant four days old suffering with purulent ophthalmia. The disease began two days previously. There was œdema of the lids of both eyes; free muco-purulent discharge on the conjunctivæ, which were red and swollen. The corneæ were both clear, and there was no chemosis.

Iced cloths and boric-acid wash were being used by order of the family doctor. This treatment were continued night and day, and vaseline was used between the lids. Argentum nitrate solution gr. x — $\frac{3}{4}$ i was applied daily to the everted lids, care being taken that the solution did not come in contact with the corneæ.

July 7th.—Patches of organized exudate appeared on the palpebral conjunctivæ of both eyes, and the silver solution was applied only where the patches did not present themselves. These patches continued for three days, and gradually disappeared. At the end of a week the conjunctivæ were free from organized exudate, and the œdema of lids was much reduced. The purulent secretion was less free at this time than when first seen.

July 11th.—Both corneæ became hazy-looking at their centres, and the iced cloths were abandoned. Mydriasis was produced with atropine.

July 14th.—Infiltrated patches covered nearly one third of the corneæ, and were centred about their upper third.

They were of a milky white color.

Dr. F. N. Lewis was called in consultation. At his suggestion the iced cloths were reapplied and solution of atropia in castor oil was used.

July 18th.—The infiltrate in the corneæ had extended so as to cover about two thirds of their clear surfaces.

The opacities appeared more dense at their lower borders, and they had taken on a dense brownish appearance.

The œdema of the lids and the purulent secretion having

lessened, the iced cloths were discontinued. These opacities remained in this condition for two weeks. Muriate of pilocarpine gr. iv. — $\frac{3}{4}$ i was, on suggestion of Dr. Lewis, used instead of the atropine. Mydriasis if produced at this time could not be determined, owing to the density and extent of the corneal infiltration.

While in this condition the infant was taken by the mother, without consulting the medical attendants, to the office of an oculist of this city for an opinion.

The mother and nurse report that the doctor pronounced both corneæ broken, and said that further treatment was useless except boric-acid wash.

July 23d.—The yellowish tint of the opacities began to fade, and at the end of eight days they presented a color similar to that seen at the end of the first week of their appearance.

August 5th.—The opacities were much reduced in circumference, and during the next three weeks gradually disappeared. At the present time the eyes look bright and the vision is good. The corneæ are clear.

Remarks.—It is certain that the continuity of these corneæ was never at any time broken. That they should have produced that impression is not surprising.

REPORT OF A CASE OF VICARIOUS HEMOR-
RHAGES INTO THE EYES AT THE
MENSTRUAL PERIODS.

A. EDWARD DAVIS, A.M., M.D.

Lena B——, a young married woman, aged 22 years, came to the clinic of Dr. Lewis, at the Manhattan Eye and Ear Hospital on Jan. 12, 1897, and was assigned to me for examination and treatment.

History.—One year ago the right eye became suddenly inflamed and the sight very much impaired. This inflammation was mild in character, lasted but about one week, and got well of itself without any treatment. The sight in the eye returned to some extent, and now, by the aid of glasses, is very good.

One week ago she awoke with the sight gone from the left eye (just as it had gone from the right) though it was perfect on going to bed the night before. She noticed the change in the eye more particularly, because the sight was so poor in the right eye, and because she had depended on the left eye almost altogether for her work.

No specific or rheumatic history could be elicited after a searching enquiry, and the condition of the patient certainly shows no trace of either. Although the patient is 22 years of age she never menstruated until she was 21 years old, the flow lasting but about 24 hours, very scanty and often not necessitating the use of a napkin. She has never had any painful menstruation and has always been regular. For the last twelve months the patient has complained of sleepiness at times, but she has never been seriously ill and has never been injured.

The patient's father died at the age of 35, when she was a small child, and she does not know of what disease; her mother is living, aged 50 years, and in good health. She has five sisters, one older and the others younger than herself, all healthy and with good sight.

The sudden loss of sight in the right eye (afterwards partially restored—vision now in that eye is $\frac{2}{80}$, brought up to $\frac{3}{8}$ with the proper glass) occurred just two days before the establishment of the menstrual periods; and the sudden impairment of sight in the left eye took place about one year later, just one day after the menstrual flow.

Condition.—Her general health is first class. She weighs now 135 pounds, although when 16 years old she weighed 160 pounds. Her flesh is firm, not flabby, and she has not lost but rather gained in strength since she has not been so stout. She eats well, has no cough, and an examination of her chest by Dr. Bowles shows her to have sound lungs and no heart lesion of any kind.

Dr. W. H. Haskin made a vaginal examination and reports a retroversion, but that the womb is perfectly movable, the os uteri patulous and offering no obstruction to the menstrual flow.

Dr. Haskin also examined the blood of the patient and found it rich in hæmoglobin (90 per cent.) and in red corpuscles; so there is no pernicious æmia in the case.

The urine has been examined repeatedly, especially for sugar, but none has been detected. The specific gravity, 1008, is rather low, but no trace of albumen has been found at any time. The quantity of urine passed in 24 hours is normal, about 50 ounces; and there is no diminution of urates, which might cause an increased blood-tension; nor is there any indication of oxaluria. There is no history of epistaxis, but the patient suffers from constipation.

Eye Conditions.—Right eye, the ophthalmometer shows a large amount of corneal astigmatism. Vision = $\frac{1}{10}$: $\frac{1}{10}$ with -50 D. $\ominus -3.50$ D. cyl., axis 60° . The pupil is irregular, partly occluded at the periphery, and there are posterior synechiæ. Under the use of atropine (solution, 4 grs. $\frac{3}{4}$ i), instilled every five minutes for forty minutes, the synechiæ yielded above, but a firmer adhesion remained between the lens and iris below. The ophthalmoscope showed the fundus of the right eye to be normal. Left eye, the ophthalmometer shows but .50 D. astigmatism. Vision = $\frac{1}{10}$, not improved. The pupil is about two thirds dilated, but reacts slightly when light is thrown into either eye, more markedly, however, when the light is thrown into the right eye (consensual reaction). Tension is normal; no pain. In fact, she had never had pain in either eye, but has complained of a heavy feeling in the forehead at times. The ophthalmoscope shows a hazy fundus, but with a red reflex all over it. This diffuse haziness is so marked that the disc and retinal vessels cannot be made out. However, with a $+2$ D. glass in the ophthalmoscope, a triangular white spot, about one third the size of the disc, can be seen just to the outer side and below the disc, about 4 mm. from it. In the centre of this triangular white spot is a small red spot, and extending from this red spot, directly forward and slightly upward, is a balloon or cone-shaped membrane, the apex of

the cone attached to the red spot, and the membrane extending forward into the vitreous. This cone-shaped membrane could be traced distinctly by gradually increasing the strength of the plus glasses in the ophthalmoscope, till the base of the cone could be seen best with a plus 8 diopter glass. The diffuse haziness of the fundus indicated that the coloring matter of the blood from the hemorrhage had become dissolved into the vitreous.

Treatment and Progress of the Case.—A cathartic was prescribed to begin with, and the patient was placed on the mixed treatment of mercury and potassium iodide, though no specific history could be obtained.

At the end of one week the pupil had contracted down to almost its normal size, and the vision had improved from $\frac{1}{16}$ to $\frac{1}{8}$. The haziness of the fundus changed but little, however.

On February 8th, about one month after first observing her, the pupil had resumed its normal size and action, the haziness of the fundus cleared considerably, but not sufficient for a view of the disc or blood-vessels. Vision had increased to $\frac{1}{10}$. On this date I presented her to the New York Ophthalmological Society. In the discussion which followed, it was suggested that *retinitis proliferans* might follow the hemorrhage, as this rare condition sometimes follows hemorrhages into the vitreous.

March 3d.—About two months since the hemorrhage, the vision has improved to $\frac{1}{8}$; the fundus is sufficiently clear to get a faint outline of the disc and the large retinal vessels, and to show that the hemorrhage is from the choroidal vessels. The membrane is thinner than at first, but still persists.

Etiology, Prognosis, and Treatment. Etiology.—In reporting this case of vicarious, or as some would prefer to call it idiopathic hemorrhage into the eyes of this young woman, I am not unmindful that hemorrhages of a like character also occur in the eyes of the opposite sex, especially at puberty and up to twenty-five years of age. However, these idiopathic hemorrhages into the vitreous are very rare. Niden observed it only nine times in 35,000 cases between the ages of fifteen and twenty-four years. The etiology of recurrent, spontaneous hemorrhages into the eyes of young adults (excluding, of course, highly myopic and diseased eyes) remains obscure. The very term *idiopathic* hemorrhage, which is applied to this condition by most writers, is a confession of uncertainty of cause.

Niden* in a paper on this subject, read at Heidelberg in 1882, says its cause cannot be traced, and expressly excludes

* Reviewed in *Archives Ophthal.*, vol. xi., p. 482.

albuminuria, diabetes, syphilis, gout, hæmophilia, etc., as factors in its etiology.

Eales * considers the condition due to a neurosis. He says : "From the character of the hemorrhage, and from the evidence of local variations of circulation, and from the slow pulse, constipation, flushing of the face, headache, and puffiness and discoloration of the eyes, I am inclined to attribute this combination of conditions to a neurosis affecting both the circulatory organs and the digestive system, leading on the one hand to partial inhibition of the muscular movements of the bowels, and to a vasomotor contraction of the vessels of the alimentary canal, with inhibition of its secretory functions, thereby causing dyspepsia, constipation, malnutrition ; and on the other hand, to a compensatory dilatation of the systemic capillaries, especially those of the head, and in these cases of the retina causing over-distention of the venous system and systemic capillaries, with liability to rupture on the occurrence of any intensifying cause."

Zieminski † is of the opinion that hypertrophy of the heart may have something to do with it, but he thinks the real cause is due to auto-infection from retention of decomposed fæces. Or, if we put his words into the language of to-day, we would say *ptomaine* poisoning.

The fact that most of the cases that have been reported have been obstinately constipated would seem to lend some color to his theory.

Spalding, ‡ in an exhaustive and ably written article on this subject, in 1892, gives three factors as exciting causes, viz. : 1. Too violent exercise. 2. Suppression of habitual discharges (menses, epistaxis, bleeding hemorrhoids, etc.). 3. Over-work of the eyes.

That menstruation, particularly abnormal menstruation, affects the eyes at times cannot be doubted, judging from the number of well-observed cases reported in literature.

The cases of recurrent herpetic eruption on the cornea, regu-

* Quoted in Berry's Text-Book, *Diseases of the Eye*, p. 319.

† *Record d'Ophthalm.*, 1888.

‡ *Arch. Ophthalm.*, vol. xxi., pp. 220-30.

larly at the menstrual periods, reported by Landesburg * and Ransohoff † are classical. Mueller, ‡ in 1893, reports the case of a woman who had menstruated regularly from her fifteenth year, and who, from her twenty-fourth year had a recurrent conjunctivitis with marked chemosis at each menstrual period, until she married and became pregnant. During three pregnancies the conjunctivitis ceased, to recur between times. This case was so well marked and closely connected with the menstrual periods that Mueller called it *chemosis menstrualis*.

Friedenwald, § in a recent paper on affections of the eye and normal menstruation, reports two cases of superficial punctate keratitis, one case of conjunctivitis, one case of iritis, and two cases of hemorrhages into the vitreous, which recurred regularly at the menstrual periods for a number of months. The cases of iritis and vitreous hemorrhages, however, occurred in previously diseased eyes.

His opinion was "that menstruation acted only as an exciting cause through the increased pressure of the general vascular system."

In the case reported by me, I am of the opinion that the hemorrhages into each eye was due to the general increased blood pressure in all of the vessels, from the almost complete suppression of the menses, and, perhaps, partly from constipation.

Treatment.—Graefe was of the opinion that these cases did just as well without any treatment whatever as under the best.

Nieden advised mercurials and iodide of potassium. Spalding strongly advised the hypodermic injections of muriate of pilocarpin, $\frac{1}{16}$ gr., once a day, Heurteloup's leech to the temple, and constant current.

I may say that I consider the natural leech just as good as the artificial one of Heurteloup. The alimentary canal in these cases should be carefully looked after, and a general hygienic régime carried out.

Prognosis.—On the whole the prognosis is good. Unless the hemorrhages recur too often the vision remains fairly good, and sufficient for practical purposes.

* Hirschberg's *Centrabl.*, 1883.

† Zehender's *Monatsbl.*, 1889.

‡ Zehender's *Monatsbl.*, 1893.

§ *Journal of Eye, Ear, and Throat Diseases* (Baltimore), Oct., 1896.

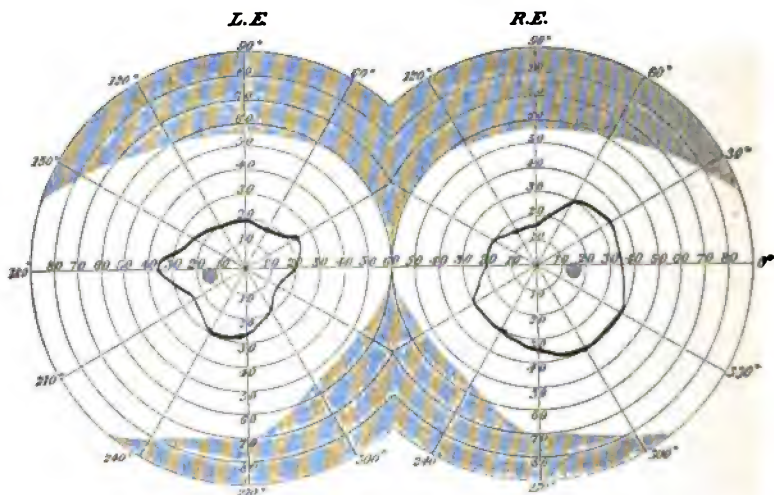
A CASE OF TRAUMATIC BLINDNESS, WITH
PARTIAL RECOVERY OF VISION
AFTER FIFTEEN MONTHS.

W. MERLE D'AUBIGNÉ CARHART, M.D.

On August 8, 1890, J. S., aged 30, in coming out of a low doorway, struck his head with considerable force against the top of the doorway. At the time he was with a driving party, and during the return to his hotel the jar of the wagon caused him intense pain. Before the hotel was reached he was somewhat delirious, and was supported in the wagon by his friends. An examination of the injury showed an abrasion over the vertex, a little to the right of the median line, with slight swelling of the surrounding tissue. During the following night the physician in charge succeeded in restoring him to partial consciousness, but within a few hours stupor, alternating with delirium, set in, lasting five days. The hotel was situated near the railroad track, and the passage of the trains caused violent convulsions, beginning when the train was in the distance, and increasing in severity as it passed. So sensitive was his brain to the irritation of sound vibration, that each convulsion began before his attendants could hear the sound of the approaching train. Having continued violent about three weeks, the convulsions diminished in intensity and frequency, and finally ceased about October 7th. Within five days after the accident he recovered consciousness, and his mind, in the intervals between convulsions, was comparatively clear, except that memory of the distant past seemed defective, and the effort to think was painful.

One week from the accident, after a convulsion, he noticed objects in the room were indistinct, and each day thereafter his vision decreased. Within one week more, for an hour after each convulsion, his vision would leave him, recovering partially in the intervals. On August 22d, an especially severe and prolonged convulsion was caused by the passage of two trains in quick succession, and all that evening vision remained very indistinct. The next morning he had merely perception of light, and within two days total blindness set in, which lasted fifteen months. In September he was examined, with a view to operative interference, but doubt as to the locality of the

lesion decided against the operation. It was found that the left arm and leg were partially paralyzed, sensation being also impaired and the reflexes abolished on the same side. By the 15th of October he had sufficiently recovered from the weakness and prostration following the traumatic meningitis, to be removed from the hotel in the Catskills to his home in Orange, New Jersey. There his general health continued to improve, and the impairment of motion and sensation passed off gradually, until he was able, within a few months, to do anything that was possible without vision. Once, during the next year, an attack of stupor and convulsions occurred, of two hours' duration, brought on possibly by business anxiety and worry.



On November 5, 1891, he noticed a faint light, and within a week objects were visible. In December he could see comparatively well with the left eye. The right eye remained blind till the following spring, when it partially recovered sight, but not to the extent of the other eye. On November 12, 1892, he became unconscious for an hour, after which his sight was dim for an hour and a half longer, but since that time he has had no trouble of the kind to my knowledge.

He was seen by me in July, 1893, when his vision was R. E. $\frac{1}{100}$, L. E. $\frac{1}{100}$, unimproved by lenses. The ophthalmoscope showed nothing distinctly abnormal in either eye. There was no disturbance of the ocular muscles at that time. Unfortunately, I failed to secure a satisfactory test of the field of vision,

and I understand no tests, either of the field of vision or of the ocular muscles, were made within a short time of the accident or during his period of blindness. When I saw him, nearly three years had elapsed since the accident, and in that time some oculo-motor paralysis might have disappeared, or even degenerative changes in the retina made the field of vision less conclusive than if taken at an earlier date.

I have given this clinical history in detail because it seems to me to throw some light upon cerebral localization. The history shows hemiplegia, hemianæsthesia, and abolition of the reflexes, all of the left side, with total blindness, the latter apparently being developed in the course of a traumatic meningitis. I think it probable that there was bilateral homonymous hemianopsia, due directly to the traumatism, and although no charts of the field of vision taken shortly after the accident are at hand for demonstration, the little information of the present field of vision in my possession tends to show it to be markedly defective in both eyes. The pressure upon both cunei of a meningeal exudate may well have caused the defective sight of an hemianopsia to become total blindness. The partial recovery of vision is in my estimation to be explained by the gradual absorption of the exudate, while the visual portion of the primary lesion has unfortunately been more permanent. The location of this primary lesion has been a matter of grave doubt, and all I can do is to suggest that it possibly was situated in the visual tract, near the right internal capsule. This is the only situation where hemiplegia and hemianæsthesia of the opposite side are combined with bilateral homonymous hemianopsia, the left internal capsule being out of the question from the crossed paralysis of motion and sensation referred to the left side. A lesion within the occipital lobe, or in the cortex, would not be accompanied by either hemiplegia or hemianæsthesia. A lesion in the optic thalamus might have hemianæsthesia with hemianopsia, but not hemiplegia also. If the optic tract were affected near the crus cerebri, we might get hemiplegia and hemianopsia of the one side and oculo-motor paralysis of the other; but in our case we have hemianæsthesia and hemiplegia of the opposite side and no evidence

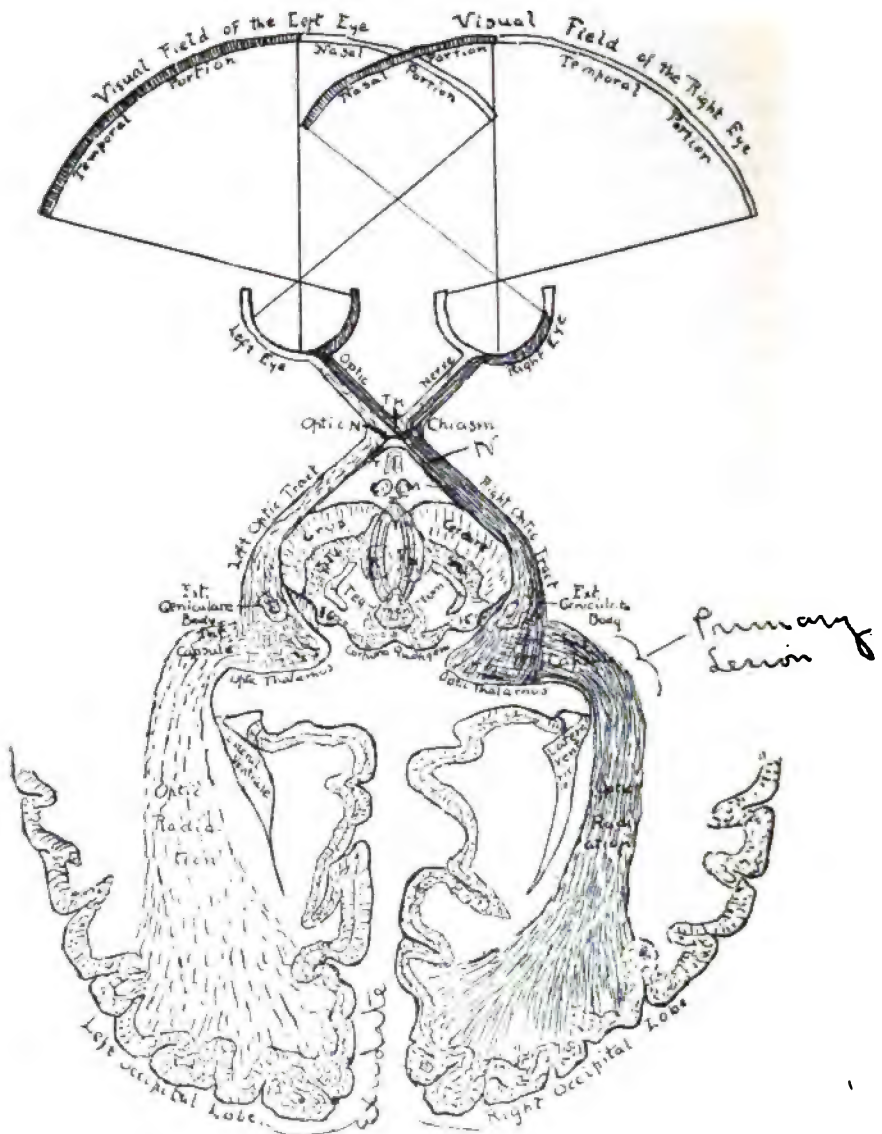


CHART OF OPTIC AND VISUAL TRACTS.

- T. Unilateral hemianopsia.
- H. Bilateral heteronymous hemianopsia.
- N. Bilateral homonymous hemianopsia.

of oculo-motor paralysis. Any lesion nearer the orbit in the optic chiasm would give unilateral or bilateral hemianopsia, but of course no hemiplegia or hemianæsthesia. The hemiplegia and hemianæsthesia apparently were pressure complications of a lesion confined to the visual tract, since they passed off within a few months, leaving as the permanent result merely the visual defect ; and for that reason I do not consider a cortical location in the motor area for the primary lesion at all probable, for motor disturbance caused by traumatism is not usually transitory unless relieved by operation. If I am right in my location of the primary lesion, it was beyond the reach of direct operative interference ; but if I am also right in my idea of the damage done to the visual centres by the inflammatory exudate, an attempt to relieve pressure and drain seems to me to belong to the surgery of the future if not of the present. There is very little shock or danger in a small trephine hole, which ought to heal with healthy granulation tissue within a week under proper aseptic conditions. I have had depressed fracture cases up and about in two or three days and the hole filled in under the first dressing, as undoubtedly have most of my professional brethren with surgical experience. I do not say I would have done as follows if I had seen the case at the time, but it seems to me that an immediate exploration of the motor area near the site of the external wound would have been good surgery to settle all doubt as to the state of affairs beneath the skull cap. Perhaps nothing more than slight depression of some spicule of bone might be found. If so, might not one possible cause of the meningitis be removed, and so the patient spared those disastrous convulsions ? Secondly, I believe some day we shall make trephine openings in the post-auricular region for drainage of occipital pressure from hemorrhage or exudate, as in this case I have reported.

Since writing the above I have had an opportunity to make another examination of the eyes of J. S., with interesting results. His vision to-day is : R. E. $\frac{3}{8}$, L. E. $\frac{4}{8}$, and by the ophthalmoscope the macula and optic disc seem entirely normal in both eyes. I give the field of vision, which is apparently more con-

tracted in the left than in the right eye. He is in fairly good health, and with the exception of some headaches he does not find much trouble on using his eyes. His central vision is sharp and distinct for near and distant tests. There never have been any symptoms of alexia or aphasia.

MYOPIA FOLLOWING IRIDECTOMY FOR CHRONIC GLAUCOMA.

EDGAR S. THOMSON, M.D.

MYOPIA occurring during glaucoma seems to have received very little notice from writers on either subject. This may be because it is a transient condition, and much less important than the disease which is its cause. It seems, however, that it should not be overlooked, on account of its importance in influencing the visual test, and so leading us astray as to the progress of the primary disease.

Mittendorf (*Trans. Am. Oph. Soc.*, 1888), in a brief article on what he calls "Symptomatic Myopia," reports two cases of myopia of less than 2 D. occurring in the course of chronic glaucoma and disappearing entirely after iridectomy. He also reports several similar cases in iritis, "in which disease," he says, "it is most frequently observed, although it may occur also in glaucoma and serous choroiditis." His explanation of the condition is as follows: "In symptomatic myopia the focussing of the rays is due to advancement of the lenticular system towards the cornea, either by increase of the contents of the vitreous chamber, or by swelling of the lens itself."

This is the only decided expression of opinion on this subject that I have been able to find. Many other writers mention similar conditions; Donders, Loring, Noyes, and others have reported cases of myopia produced by forward luxation of the lens, but no one else seems to have described it in glaucoma. Landolt (*Refract. and Accom. of the Eye*, Chap. II., p. 127) says that myopia *may be* caused by advancement of the lens, increase in the corneal curvature, increase in the refractive index of the aqueous or of the crystalline, or by decrease in the refractive index of the vitreous.

It seems rather strange that the condition should not have

received more attention in connection with glaucoma, as the primary cause, the advancement of the lens and iris producing the characteristic shallow anterior chamber, is so universally recognized. That the advancement of the lens would carry its focal point forward, is so self-evident as to need no argument. The same may be said as to its direct cause, which must evidently be increase in the pressure in the vitreous chamber or decrease in the pressure in the aqueous chambers.

According to Priestley Smith's theory, "waste fluids" pass from the vitreous into the aqueous normally. In glaucoma this is no longer possible, and as a consequence the vitreous chamber gets overfilled and the lens is pressed forward. He further believes that there is an increase in the amount of blood in the interior of the globe, which tends to increase the pressure on the lens. Rheindorf (*Klinische Monatsblatt*, 1888), holds to the same theory, and says that "there must be an imperfect passage of fluids from the vitreous, or the lens would not move forward."

In the case reported below the advancement of the lens did not take place until the tension of the anterior chamber was reduced by the iridectomy. No doubt there was also at the same time an increase in the vascular supply of the globe, which would have influenced the position of the lens in the same direction.

Mrs. F., 55, married, came to me Feb. 8, 1896, complaining that the vision in her right eye had been failing for four months or more. She had also had severe headaches, confined principally to the right temple, and coming on periodically at intervals of two or three weeks and lasting from one to three days. She has always been subject to rheumatism in a sub-acute form and often has indefinite joint pains, presumably rheumatic. The family history is indefinite.

Externally, the right eye presented a fairly normal appearance. There was some thickening of the palpebral conjunctiva but the ocular conjunctiva was not in the least injected. The cornea, by oblique illumination, was slightly hazy and decidedly anæsthetic. The anterior chamber was of about the normal depth, at any rate not shallow, and the pupil reacted sluggishly but was of corresponding size to that of the other eye. The tension was slightly increased.

The ophthalmoscope showed a marked total cupping of the nerve, 2 D. deep, with the arteries reduced in size and the retina extensively atrophied, as shown by a heavy stippling of pigment all over the fundus. The choroidal vessels showed plainly. The left fundus was normal. The ophthalmometer showed :

R. 0.50 D. w. r., ax. $90^{\circ} +$, $180^{\circ} -$.

L. 1. D. w. r., ax. $75^{\circ} +$, $165^{\circ} -$.

The tests for vision showed :

R. V. = $\frac{3}{80}$ - : no glass accepted.

L. V. = $\frac{3}{80}$ - : $\frac{3}{80}$ + w. + .50 D. s. \ominus + .50 D. c. ax. 75° .

Jaeger No. 1 at 12 in. with + 3 D. s. added to the above, which was prescribed for near work. The visual field was as given.

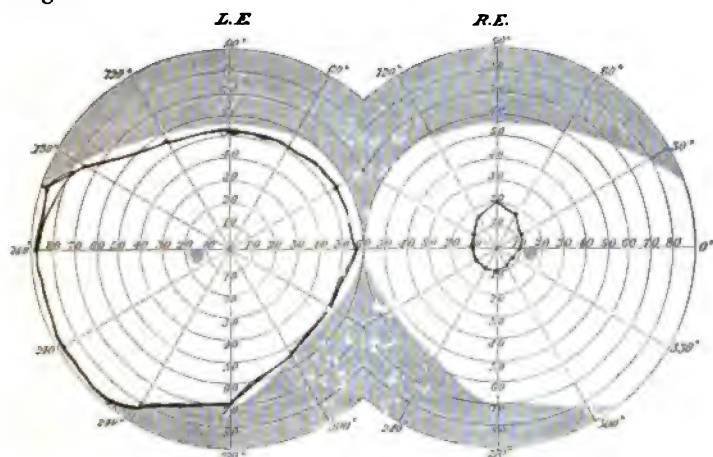


FIG. 1.

A solution of pilocarpin hydrochlorate (gr. iv- $\frac{3}{4}$ i), was ordered, to be dropped into the eye three times a day.

Two weeks later she returned and as the tension was still increased, although the pain had not recurred, the pilocarpin was stopped and a solution of eserine sulphate (gr. j- $\frac{3}{4}$ i), was given to be used three times a day during the attacks. The refraction was again tested with the same result.

June 19, 1896, she reported that the attacks had been controlled by the eserine but that the later ones had not yielded so readily. The condition of the right eye was practically unchanged, except that the central vision was slightly decreased. R. V. = $\frac{3}{80}$.

An iridectomy was advised, for the purpose of relieving the neuralgic attacks and, possibly, retaining what field and vision remained.

This was done June 23d. The section was placed as far back in the sclera as possible and the coloboma was made upwards.

The after course of the case was uneventful, except for a slight consecutive iritis which delayed her recovery a little. July 7th, having fully recovered, she was tested. The left eye had not changed. The general condition of the right eye seemed better. The cornea was clear and the tension normal. The anterior chamber was *shallow*. The field was as given.

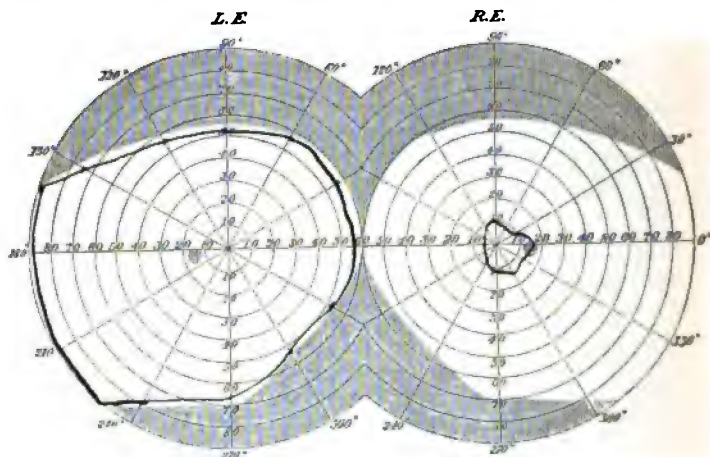


FIG. 2.

On taking the vision, I was surprised to find it only $\frac{1}{8}$, and on making another ophthalmoscopic examination, I found that the eye was myopic 2 D.

Javal, R. 0.25 D. w. r. ax. $90^\circ +$, $180^\circ -$

R. V. = $\frac{1}{8} + : \frac{1}{8} -$ w. -1.75 D. s.

Accordingly the following glass was prescribed for near work.

R. $+1.75$ D. s.

L. $+4.50$ D. s. $\odot +.50$ D. c. ax. 75° .

Aug. 5th, her condition was unchanged; she had had no more neuralgic pain, and the vision and refraction remained as when last examined.

She did not return after this until Feb. 1, 1897. She then reported that she had had no attacks and that the vision of the

right eye had improved. Since the early part of December, she thought, it had been growing clearer, and she had also noticed that her last reading glass for the right eye, was no longer comfortable. On examination the eye was found to be perfectly quiet, pupillary reaction good, tension normal, anterior chamber of corresponding depth to that of the left eye, and the fundus unchanged, except that it could once more be seen with the aperture.

Javal, R. 0.50 D. a. r., ax. $180^{\circ} +$, $90^{\circ} -$

R. V. = $\frac{1}{8}$ - : $\frac{1}{8}$ w. +. 50 D. c. ax. 180° .

The left eye showed no signs of trouble.

The question of how the myopia was produced is a very interesting one. It is evident that the cause could not have been lengthening of the antero-posterior axis of the globe, as the tendency of the operation, in decreasing the tension, would have been altogether against it. Then, too, there were no evidences, ophthalmoscopically, of stretching at the posterior pole, which, of course, would have persisted if it had ever existed at all.

The tendency of the operation as regards the cornea, would have been to increase the radius of curvature rather than to decrease it. The measurements by the ophthalmometer showed that the change in the cornea, as far as the astigmatism was concerned, consisted of a flattening, or increase in the radius of curvature, of the vertical meridian; as was shown by the fact that before the iridectomy the astigmatism was .50 D. w.r. ax. 75° , while after, it was .50 D. a.r. ax. 180° . It will be remembered that the incision was directly above, in the vertical meridian.

Increase in the refractive index of the aqueous, or decrease in that of the vitreous, may, according to Landolt, cause myopia; but, as he says further (Ch. V., p. 518), "cases of this kind have not yet been made out with certainty." It seems highly improbable that the refractive index of either of these media, especially that of the vitreous, should return to normal after such a decided change.

We have therefore to look to the lens. Changes in the crystalline producing myopia may be divided into three classes (Landolt, Ch. II. p. 127), (1) increase in its index of refraction, (2) increase of its curvature, (3) advancement.

Increase in the refractive index of the lens occurs in the early stages of senile cataract where the lens is becoming sclerosed, or in simple sclerosis without much opacity, and develops very gradually. In the case mentioned there were no opacities of the lens, and no indications of sclerosis, which would not have developed so suddenly, nor would it have subsided so soon, having once existed.

The curvature of the lens could have been increased only by spasm of accommodation. It is inconceivable that the reduction of the pressure could have increased its curvature, for it is evident that the pressure was applied to the lens equally on all points, and that the pressure from the vitreous after the operation could only have acted by stretching the zonula, which would have *decreased* the lens curvature. As to spasm of accommodation, the age, coupled with the duration of the condition without asthenopic symptoms, puts that out of the question.

We are forced to the conclusion, therefore, that this myopia of 2 D. most probably was caused by advancement of the lens.

The facts that the anterior chamber was of normal depth until after the operation, when the myopia was discovered, and that it once more became of normal depth when the myopia disappeared, bear out this theory. The scleral wound probably has remained as a filtration cicatrix and it is assumed that the circulation of the globe took the five months intervening between the iridectomy and the disappearance of the myopia, to recover itself. However, the future course of the case will throw some light on these points.

Probably the reason that this condition has not been more frequently observed in glaucoma, is that it may be so often obscured by opacities of the media. The practical question, however, arises ;—is it not responsible for part, or at times even all, of the reduction of central vision in glaucoma, where the anterior chamber is shallower than normal ?

It seems to me that it should always be taken into consideration, as bearing in a very important way, on our information as to the progress of the disease and the prognosis as to vision.

REPORT OF A CASE OF STAPHYLOMA OF THE CORNEA FOLLOWING SCURVY.

SILAS F. HALLOCK, M.D.

Y. J. came under my care at the Manhattan Eye and Ear Hospital on March 27, 1896.

History.—He was born in Norway 22 years ago. Has been a sailor since he was quite young. Family history good, so far as he was able to give it. Patient had always enjoyed good health until his last sea voyage, and no specific history could be obtained. The ship on which he last sailed left Shanghai, China, and went to Yeddo, Japan. On this voyage they were at sea for fourteen months. About four months ago, or six weeks before they landed, he, with many other of the sailors, was attacked with scurvy. After he had been sick about a week, his left eye became quite sore and painful. Two weeks later, the right eye also became sore. The pain in the eyes lasted for four or five weeks.

Present Condition.—A long staphyloma involves the entire cornea of left eye, except a very narrow strip at the upper and outer margin. Right eye: Leucoma adherens with vascular opacity running up from the lower border to the middle of the cornea.

R. V. $\frac{8}{10}$. L. V. can not count fingers, but can see the hand move, if in good light.

March 30th, Dr. Webster did a modified Critchett operation on the left eye. Using two needles, he excised all the staphylomatous portion of the cornea, being careful to save that portion of the cornea which had remained clear. Eye was dressed and both eyes bandaged, and a Ring mask applied.

March 31st.—Complains of some pain.

April 1st.—Some reaction; a Knapp dressing ordered.

April 4th.—Wound does not look well, and there is some irritation of right eye, and right pupil does not react to atropine. From this time the wound began to heal, and irritation of right eye subsided, but there was considerable bulging of the wound.

On April 13th an iridectomy was performed on both eyes. In the right eye the iridectomy was done at the upper and outer side.

There was some reaction following in both eyes, but in two

days this subsided, and healing took place nicely; and the bulging at the site of the Critchett operation flattened down very rapidly.

April 18th.—Left cornea healing smoothly.

April 20th.—R. V. $\frac{20}{80}$. L. V. could count fingers at two feet. Discharged.

May 1st.—Readmitted. As a result of the iridectomy on the left eye, there is a very narrow coloboma upwards, which is covered by the upper lid. Cornea has about a normal curvature. Wishing to enlarge the coloboma, Dr. Webster made a section with a keratome above and to the temporal side, where there was the most clear cornea; with great difficulty and by using the back tooth forceps, he excised a portion of iris which was attached centrally to the cornea, leaving a bridge between that and the former coloboma. This bridge was cut with probe-pointed scissors. Wound healed nicely and he was discharged May 11th.

R. V. $\frac{20}{80}$; L. V. $\frac{20}{80}$.

It is of special interest to note that by this conservative Critchett operation useful vision was restored to the left eye.

OTITIS MEDIA SUPPURATIVA ACUTA. MASTOID
OSTEITIS. EPIDURAL ABSCESS. OPERATION.
RECOVERY.

JAMES E. H. NICHOLS, M. D.

C. K., female, aged 20, admitted November 14, 1893.

History.—Four weeks ago had attack of acute follicular tonsillitis. Following that an acute suppurative otitis media, with a great deal of pain and tenderness over the mastoid region, gradually increasing. Subsequently it was elicited that in a family quarrel the patient had been struck on the right parietal eminence a hard blow with a chair leg.

Present Condition.—Discharge now slight from middle ear. Canal swollen. Swelling, tenderness, and redness over mastoid with bulging of auricle. Large amount albumen in urine. Ocular symptoms negative. General condition poor. Temp. 100°. Pulse 112. Some nausea, but no vomiting.

Operation. November 15th, by usual incision, under ether narcosis. Mastoid cells found broken down and full of pus and granulations. These thoroughly curetted, the antrum opened, and found in a similar condition. Free communication established with external canal, the parts irrigated, dried, and dressed in the usual manner with iodoform gauze. Patient bore the operation ill and remained in a collapsed condition for two hours, when reaction set in under heat and stimulants.

November 16th.—Patient had a bad night with great pain in the head (vertex), but less in temporal and mastoid regions. Dressing changed and wound found clean. Temp. 103° to 104°. Pulse 120-132, and resp. 22-26. Urine in large quantity loaded with albumen and containing epithelial and hyaline casts, free blood corpuscles, and renal epithelium. No more collapse. β . Pot. citr. and inf. digitalis. Mental condition clear.

November 17th.—Passed a good night. Temp. at noon normal, at 1.30 P.M. dropped to 96.4°. Pulse 88, and resp. 18; patient went into a state of collapse. Digitalis hypodermatically, heat applied, and brandy by the mouth. This condition lasted four hours, when she began to recover.

November 18th.—Very restless night. Temp. began to rise

and reached 103° at 5.30 A.M., with pulse 100, resp. 20, when dressing was removed, the wound cleaned and redressed with marked abatement of symptoms.

November 19th.—Good night. Some discharge from wound, general condition better.

November 21st.—Progress satisfactory. Temp., pulse, and resp. normal. No albumen. At 8 P.M. sudden rise of temp. to 102.2° . Pulse 120, resp. 18., and development of severe headache with especial pain over right side.

November 22d.—Dressing removed and wound found clean. Ice coil ordered.

November 23d.—Slight stupor all night and great pain in head. Temp. at 1 P.M. 105.4° , pulse 128, resp. 30. Dressing removed; no pus present. No indications of pressure on cerebrum. Ice coil, sponge baths, and digitalis; under which symptoms rapidly subsided.

November 24th.—Towards morning a profuse sudden discharge of bloody pus and serum from wound soaking the dressing. Patient experienced great relief. Packing removed and drainage tube substituted. The M. T. having closed partially, under cocaine, the opening was enlarged and some granulations removed from middle ear. Temp. decreased rapidly.

November 25th.—Bad night. Headache and two chills, with subnormal temp. at 4 A.M. Pulse 72, resp. 18. Latter part of night in comatose condition. In the morning much better. No albumen. Ocular examination negative, and all pressure symptoms absent.

November 26th.—Good night; slept well; pain slight. Temp. normal.

All conditions improved daily. Patient bright, pain diminishing, and temp., pulse, and resp. remained normal with one exception, a slight rise of temp., 7th Dec., until Dec. 8th, when at 3 P.M. patient had an attack of syncope with widely dilated pupils and bad headache; wound healthy and healing; no cause ascertainable.

December 14th.—Had several attacks of syncope, not due to pain or temperature. Close questioning elicits history of family troubles which weigh on her mind, as also fact of her being struck on the head referred to before. These attacks were repeated at intervals during the next two weeks, but no other symptoms were complained of. The wound healed, the M. T. resumed its normal appearance, and the patient experienced no pain, and on January 5th was discharged cured.

January 27, 1894.—Patient returned, complaining of great pain in the mastoid region, which had lasted for several days. On examination, a sinus was found in the former mastoid

wound, extending inwards and discharging pus. The M. T. was found intact and slightly congested. No swelling of canal. Under ether the wound was reopened and enlarged. Granulations were found in the antrum, and considerable pus. The whole cavity was carefully curetted, until no carious spot could be found; then packed with gauze and dressed. No pain, or swelling, or discharge followed this operation, until

February 5th, when some swelling manifested itself in the scalp, above and behind the upper end of the incision, not accompanied by much pain.

February 7th.—During the last two days swelling has increased rapidly, extending upward and backward, with greatest prominence over parietal eminence. Here are evidences of fluctuation. Patient has variable temperature and rapid pulse, but no symptoms whatever of cerebral pressure.

Etherized, and incision carried down to the bone over site of tumor. On retracting the edges of the wound, a portion of the parietal bone, 1 in. in length by $\frac{3}{4}$ in. in breadth, was found necrotic and loosened. On removing this, there was a gush of exceedingly foul-smelling, greenish pus, of about an ounce in quantity. When the wound had been irrigated, the dura mater appeared somewhat thickened, but free from granulations and not adherent to the bone. Exploration by finger and probe failed to find any opening in it, or any connection with the wound in the mastoid. Nor was there any further discharge of pus. The wound was dressed, and the next morning the patient appeared to be brighter and complained less of pain in the head. There followed, however, a series of metastatic abscesses all over the scalp and cervical region, which were opened, curetted, and dressed until they healed. These kept the patient in the hospital at intervals until September 14th, when she was again discharged cured. Her general condition was fair, appetite and strength good, and she suffered from no symptoms except an occasional attack of neuralgic pains in the right side of the head. She was able to resume her work, though not regularly, and kept under observation until March 12, 1895, when she again was admitted complaining of pain, paroxysmal in character, in the side of her head. On examination the folds of the old cicatrix were found much swollen and tender. The patient was extremely nervous and hysterical and debilitated. Inquiry showed that she had been living on insufficient food and under a great mental strain. The ice coil was applied, bromides and phenacetin administered, and in a few days she was well again, and was finally discharged, March 25th, entirely well. Since that date she has retained her general health and been able to

pursue her occupation, with only occasional recurrences of neuralgic attacks.

In reviewing the history of this case it is difficult to satisfy oneself whether this epidural abscess developed from a traumatic periostitis, following the blow received, or whether it came from an extension of the purulent mastoiditis and otitis media, or whether the latter was caused by the former. On the whole, seeing that the blow and the middle-ear trouble were so nearly coincident, the chances point to the latter as the source of the infection. It is hardly conceivable that a suppurative inflammation could have gone on within the skull long enough to cause infection in the mastoid cells and the antrum without having caused some other infective or pressure symptoms, while the onset of the external tumor and the discovery of the abscess followed by such a period the acute middle-ear suppuration, that it is entirely probable that the infection travelled from the ear to the dura.

OTITIS MEDIA SUPPURATIVA CHRONICA ; OTITIC BRAIN ABSCESS ; OPERATION ; RECOVERY.

JAMES E. H. NICHOLS, M.D.

F. A., 13. Well nourished, but very nervous and excitable.

December 18, 1895. *History*.—Since childhood has had ear trouble. One ear would discharge profusely for some time, then stop, and the other begin. There is no history of pain in mastoid or temporal regions at any time. Three weeks ago had some illness diagnosed by her physician as malarial fever. Had at that time some tenderness over both mastoids and some pain in both ears.

Present Condition.—Both external auditory canals much excoriated. Some foul discharge from both. Some granulations in both canals. No temperature.

Treatment.—Hot douche of boric acid every three hours.

December 19th.—Some drowsiness. Temp., 100°.

December 20th.—Leeches applied over both mastoids. No decrease in drowsiness. No change in temperature. Slight vomiting.

December 21st.—Pulse, 50. Temp., 100°. No change in drowsiness. Patient easily aroused. Answers all questions, and at once relapses into stupor.

December 22d.—Strychnia $\frac{1}{6}$ and whiskey 3 i every two hours. No localized symptoms.

December 23d.—Pulse better, 65. Strychnia and whiskey stopped.

December 24th.—Pulse and temp. same. Drowsiness increasing.

December 25th.—K. I. grs. xv. t. i. d. No change in condition either temp., resp., pulse. Deglutition normal.

December 26th.—Slight facial paralysis left side. Seen by Dr. Nichols and operation advised.

Operation at 4.30 P.M. Crucial incision 5 cm. in length over right temporal region above temporal ridge. Trephine opening 1.5 cm. diam. made through both tables, coming down on dura mater, which was found healthy at that place. The opening was carried downward into right mastoid cells, which were found to be somewhat hyperæmic, but not broken down. On enlarging the first opening forward and downward with a rongeur forceps, a quantity of thin, very offensive pus escaped,

followed by some of greater consistence. The opening was smoothed at its edges, showing the dura tense and bulging. This was incised and the incision carried through the anterior convolutions of the temporo-sphenoidal lobe. The escape of pus was very free, and gentle probing showed a cavity of about 3 cm. in diam. The finger could be carried forward into the anterior fossa without resistance nearly to the median line. Hemorrhage of moderate amount followed the incision of the dura, but was speedily checked by pressure. About 2 oz. of pus were evacuated, the cavity washed out with hot boric acid solution, a soft rubber drainage tube inserted, and the parts dressed with iod. gauze 10 %. Recovery from ether was rapid, with immediate regaining of consciousness. The patient seemed to have suffered little shock.

December 27th.—Patient slept well without anodyne and is very bright, even smiling this morning. Some hemorrhage during the night controlled by readjusting the dressings. Temp., 99.2°, Pulse, 85. Respiration normal. Ordered moderate nutrition, milk and eggs.

December 28th.—Temp., 98.8°. Pulse, 100. R. normal. Outer dressing changed. Some complaint of pain in the head. Some slight drowsiness. Very slight discharge.

December 29th.—Temp., 98.6°. Pulse, 100. R. normal. No marked change. Condition favorable.

December 30th.—Facial paralysis rapidly disappearing. Marked improvement in every respect. Moderate discharge of offensive pus. Dressings are removed, cavity washed through drainage tube with boric acid solution, and re-dressed.

December 31st.—Temp., 98.8°. Pulse, 95. All symptoms good.

January 2, 1896.—Dressed. Wound clean and filling in with healthy granulations. Slight discharge with offensive odor. Irrigated and dressed as usual. Patient has very good appetite, is cheerful, bright, and enjoys talking with friends. Her hearing is improving. Sleeps well.

January 4th.—No change except doing well.

January 10th.—Steady improvement. Temp., pulse, and resp. normal.

January 11th.—Drainage tube removed. Facial paralysis disappeared.

January 12th.—Sudden elevation temp. (101.8°). Dressings removed and wound found in good condition. R. Calomel gr. v.

January 13th.—Dressed. Temp. dropping rapidly, 99.5°.

January 14th.—Temp. and pulse normal. Slight bulging of granulations filling in wound.

January 21st.—Since last note progress of case has been

uneventful. Temp. remains normal, appetite good, and general condition of mind and body satisfactory. Wound is filling well and covering over with skin. There has been some discharge from both ears, which are douched and cleansed regularly. No odor to discharge.

January 23d.—Sudden rise of temp., 103.3° . Very dull and stupid, with pain in head. Phenacetin ordered and failed to relieve. 7 P.M.: Quinine gr. v. q. 3 h. ordered and anodynes if necessary.

January 24th.—Very restless night. Temp. lower, 102.6° . Dressings removed and parts found in good condition.

January 25th.—Temp., 101° . Feeling much better, but some swelling around right ear.

January 26th.—Swelling extends to cheek, very red, with marked line of demarcation, tenderness extreme. Some small blisters; undoubtedly erysipelas. Ordered parts kept constantly moistened with applications of saturated solution of acetotartrate of aluminium, and tr. ferri chlor. gtt. x. q. 4. h. by mouth. Temp. 101° .

January 29th.—Temp. normal since January 27th. Acetotartrate was very satisfactory. No change in treatment. Erysipelas fast disappearing.

January 30th.—Condition normal.

February 1st.—Sat up one hour.

February 23d.—Since last note patient has had normal temp. No pain or discomfort of any kind. Both ears have ceased to discharge. Her mental condition is normal and her physical condition perfect. Wound has healed.

February 26th.—Patient quite well. Discharged.

The patient remained in a perfectly healthy condition after her discharge. There was a cerebral hernia at the site of operation, which produced no symptoms and caused her no inconvenience, and which gradually diminished under the pressure of an elastic bandage worn continually. Fibrous tissue filled in the opening in the bony wall. Pressure on the sac did not elicit any symptoms. When last seen, in July, 1896, she looked perfectly well and reported herself so.

In the latter part of August notice was received of her death, but too long after it occurred to obtain an autopsy. From the letter the inference was drawn that her death was due to some acute intestinal attack, though this cannot be positively stated, and the writer has failed up to date to obtain specific information.

FURUNCULOSIS OF EXTERNAL AUDITORY MEATUS, FOLLOWED BY SUPPURATIVE OTITIS MEDIA WITH MASTOID INVOLVEMENT AND OPERATION.

M. D. LEDERMAN, M.D.

ALTHOUGH in text-books on otology, attention is called to the possible extension of a follicular inflammation of the external canal to deeper structures, the actual occurrence of such a complication is so rare that I take this opportunity of contributing the history of a case exhibiting these features.

Furuncle of the auditory canal, though generally a disease of short duration, is probably as painful as any ailment affecting this region. Fortunately the period of its activity may be curtailed by decisive measures, and though at times such methods are rejected by the timid sufferer, the sudden rupture of the furuncle affords relief. This sometimes occurs when the inflammatory process is limited to the superficial tissue. If, however, the deeper layers of the skin become attacked, days of intense suffering are experienced, and extension of the infection may reach the middle chamber and neighboring structures.

Constitutional predisposition is a reasonable and convenient theory to account for the presence of this condition in certain individuals. The tendency of furunculosis to recur in the same person, certainly strengthens this presumption. We must also consider the importance of trophic disturbances, as a factor in giving rise to similar lesions, as pointed out by Urbantschitsch. Diabetics are subject to crops of these boils, but their areas of circumscribed inflammation are not limited to the auditory orifices, but are rather general in character. It has been further noticed, that during an attack of furunculosis in an otherwise healthy person, sugar has sometimes appeared

in the urine, but vanished after the termination of the superficial disturbance.

The cases which come under the aurist's care are generally of a local character, caused by infection through a break in the continuity of the epithelial layer. This may follow mechanical interference, in the form of forcible manipulations. The infection gradually attacks the hair follicle, and by boring deeper may give rise to a pronounced cellulitis. The latter more frequently takes place in parts of the body where the underlying fascia is generously supplied. Extensive suppuration with necrosis may result in such instances. In the auditory canal, perichondritis and periostitis may follow this apparently simple affection.

Kirchner has discovered the *staphylococcus pyogenes aureus* in the pus of furuncles, and has produced abscesses in animals by inoculating them with the cultivated products. Even though the skin is sound, infection may occur if the fluid containing this micro-organism be applied to the part with friction. The successive appearance of these boils in the meatus tends to show the active properties of this bacillus, and though the infection may have attacked different follicles at the same time, the return of the disease emphasizes the importance of prophylactic and antiseptic treatment.

Little need be said regarding the symptomatology of this trouble. Local pain and tenderness will promptly direct the attention of the adult to the part affected. When deep-seated, the pain is apt to assume a pulsating character. On examination in such cases, the furuncle is flat and not definitely outlined. In a superficial manifestation, the swelling is sharply defined, and quite red in color. The temperature is usually but slightly elevated, but in children it may rise quite high and is sometimes accompanied by delirium, resembling meningitis. The latter must not be forgotten as a possible complication. Traction upon the auricle will sometimes aid us in differentiating between external otitis and middle-ear disease. In the former the hearing gradually becomes worse, while in the latter the deafness is present from the onset. Pain may be experienced over the side of the face and down the neck. When the

collection of pus is deep-seated, the membrana tympani may become inflamed, and being forced inwards may give rise to marked tinnitus, on account of the increase of labyrinthine pressure. The symptoms soon disappear after the furuncle is opened. When the upper wall of the canal is attacked, the disease is more severe on account of the multiplicity and larger size of the vessels in this vicinity. The tympano-squamous fissure also favors the spread of the inflammatory process. In arriving at a diagnosis we must not overlook the possible presence of a parotid abscess. If such should exist, pressure upon the parotid would increase the swelling in the canal. Frequently the rapid closure of the meatus prevents an inspection of the drumhead, so that we cannot positively state whether a suppurative otitis media exists, unless the same has preceded and is the cause of the furuncle. If such a state of affairs should be present, drainage would be retarded, and mastoid involvement must necessarily be anticipated, if the external swelling does not rapidly subside. Such was the difficulty in my case. We must furthermore remember the possibility of a dissecting abscess, arising from a suppurative otitis media, or a bulging of the posterior wall of the canal, from a periostitis or mastoid disease.

Before detailing the history of my case, a word or two in reference to the treatment of furuncle of this region may not be considered superfluous. Bearing in mind the limited space any swelling of the soft parts of the meatus may occupy, before encroaching upon sensitive structures, it is evident that the principal cause of the patient's discomfort is due to increased tension within a constricted osseous cavity. If the disease has reached an advanced stage, local medication has but little effect upon the agonizing pain. Here nothing short of the prompt and energetic use of the knife will offer the desired amelioration. In the initial period, dry heat may prove of considerable benefit in allaying the suffering. If seen early, topical applications of tincture of iodine carefully applied, or solutions of silver, 4 per cent. to 12 per cent., may assist in aborting the attack. Gruber claims excellent results from the introduction of gelatin bougies, each containing one sixth of a

grain of the extract of opium. These he employs when the patient objects to the use of cutting instruments. Ichthyol has been used by some in the form of an ointment, the strength varying from 5 per cent. to the pure drug. When we recall that this medicament owes its therapeutic activity to the 28 per cent. of iodine which it contains, it seems plausible that applications of this remedy may prove beneficial.

For a considerable period I have employed boroglyceride introduced into the meatus on cotton tampons, and have found it a pleasant and serviceable medication. It is merely boracic acid and glycerine heated together and then added to an equal quantity of glycerine. This substance is an active and harmless antiseptic. On being added to milk and food it retards putrefaction and acts as a preservative. Its therapeutic value is no doubt enhanced by the hygroscopic property which it possesses. Carbolic acid, atropin, and morphin combine with it readily. With the assistance of heat, menthol can be added to it, but on cooling, the menthol rapidly appears upon the surface, and the patient, if not cautioned to heat the mixture before applying the same to his sensitive ear, may experience an unpleasant and intense burning. The only objection which can be offered to boro-glyceride is that it is a proprietary article.

Expectant methods must not be prolonged if speedy relief is not effected. It has been customary to cut down upon the furuncle, but I have found quicker relief by transfixing the swelling with a small tenotomy or a Graefe knife, and cutting from within outwards, as suggested by McBride. The patient is apt to jerk the head away at the first impression of the instrument, so that we do not cut as deeply as is necessary with the former method. Following the incision, antiseptic precautions should be observed. A plug of dry iodoform or bichloride gauze, or moistened with the boro-glyceride, may be introduced into the canal, and changed in three or four hours. Another method of cleansing is to instil a saturated solution of boracic acid in alcohol. This naturally smarts for a few moments, and at times cannot be borne by the patient. The solution may be made a watery one instead.

When a tendency to recurrence exists, the alcoholic solution is very serviceable. Unguentum hydrarg. nit. in the proportion of one dram to the ounce is said to act satisfactorily in such instances. In all cases of furunculosis, internal alterative medication, together with proper attention to the alimentary tract, is an important element in bringing about a normal state of affairs. Lowered vitality naturally weakens tissue resistance, and so more easily permits the invasion of adjoining structures by an infectious process. This truism is practically portrayed in the case which I herewith report :

Mrs. X., 29 years of age, presented herself for treatment, complaining of severe pain in left ear for the last few days. Two weeks ago, before she came to me, she had a boil in the scaphoid fossa, which was lanced by the attending aurist, and soon got well. Some cerumen was at that time found in the canal, and was removed after annoying manipulation to the patient. From that time more or less pain has been experienced, and the parts were exquisitely tender at the time of my examination. Three months previous to her aural trouble, Mrs. X. had undergone three rather severe operations under one etherization, which consisted of an anchoring for floating kidney, curetting the uterus, and the radical operation for a femoral hernia. She recovered nicely from the surgical treatment, and journeyed south for a change of scenery. Her general condition when I saw her was below par, and her appearance showed the effect of her recent trouble.

On examining the ear I found a circumscribed swelling on the anterior wall of the canal, with some tumefaction of the tragus, which was quite painful to pressure. No evidence of deeper disease was observed. The furuncle was incised after washing out the canal with a solution of borolyptol. The incision gave immediate relief, and boroglyceride was prescribed. Fowler's solution, together with the rhubarb and soda mixture, was given internally. Three days later another boil appeared on the upper wall of the meatus, with pain referred to the mastoid. This furuncle was opened, and antiseptic douching was carried out every two hours. Tampons of boro-glyceride were introduced during the interim. The canal was almost entirely closed on account of the swelling of the soft parts, but this receded sufficiently to allow of an inspection of the drum. This membrane was found congested, but no further symptoms of middle-ear involvement appeared until November 14th, when a little pus was seen on the postero-inferior quadrant. The

douching was continued, and as the pain on pressure over the mastoid still existed, the ice coil was applied. No elevation of temperature up to this time. The tumefaction of the canal increased, so that no examination of the deeper portions of the canal could be made. As drainage was obstructed, and as the temperature arose to $99\frac{1}{2}^{\circ}$ F., with some increase in the mastoid swelling, I informed the patient that, in my judgment, an operation was indicated. She declined to have same performed, as she was feeling fairly well, and thought that "nature would come to her aid." She caused considerable annoyance on account of her peculiar erratic disposition, but on November 18th, she felt that the swelling over the mastoid had still further increased, and when she noticed how prominently the auricle stood away from the head, on looking into the mirror, she decided to abide by my judgment.

The usual Schwartze operation was performed. The soft parts were very much congested. Over the antrum the bone revealed the shaven-beard appearance, and I attacked this region with the chisel. No pus was observed, but granulation tissue was found in the antrum, which was removed with the curette, followed by rather free bleeding. The wound was dressed in the customary manner, the upper half being closed with sutures. Two days after the operation, the swelling in the canal had almost disappeared. The patient made an uninterrupted recovery, with the exception of some tinnitus, which lasted about two months, but disappeared under inflation and massage. The temperature never rose above 99.8° F.

DISEASE OF THE INTERNAL EAR ; ANALYSIS OF
351 CASES AS REGARDS PROGNOSIS
AND TREATMENT.

THOMAS J. HARRIS, M.D.

IN the last twenty-five years the science of otology has made noteworthy progress. With the advent of men like Politzer, Gruber, Schwartze, Moos, and many others, with their contribution to the pathology, diagnosis, and treatment of ear diseases, the science has had a new birth. To-day we are in a position to successfully treat most conditions of the external and middle ear. Our knowledge of involvements of the mastoid and of intracranial complications is to-day quite accurate, and the surgical procedures to relieve such conditions are in general well recognized. The advance in knowledge, however, of conditions affecting the internal ear has not been at all commensurate. The reason for this is easily seen ; the internal ear is not open to inspection as is the middle ear. Any trustworthy data must be derived then from post-mortem examinations. Such examinations up to the present have been few. As regards the treatment of these conditions, it is clearly recognizable that with any considerable amount of destruction of the delicate structures of the cochlea, no possible remedy exists. We believe, however, that in a certain proportion of these cases such destruction does not occur, at least at the outset, and that proper treatment at all events theoretically would be beneficial.

With a view to ascertaining, if possible, what success, has attended our treatment of these difficult conditions in the past few years, the writer has been permitted, through the kindness of Dr. J. E. H. Nichols and Dr. James B. Clemens, to examine and tabulate the records of diseases of the internal ear treated in their clinics during the years of 1894 to 1897. Before proceeding, however, to give the result of these investigations, it

may be well to allude in a few words to the more common causes of diseases of the internal ear. These include :

I.—Disturbances of circulation in the labyrinth, as anæmia, hyperæmia, and hemorrhage ; infectious diseases—syphilis, mumps, leukæmia, influenza, measles, scarlet-fever ; rheumatism, trauma, professional occupations, inebriety, senile changes.

II.—Catarrhal, purulent, or sclerotic changes, involving the middle ear primarily. The condition known as Ménière's disease, and the more common infectious diseases, as scarlet-fever and diphtheria, involving both middle and internal ear simultaneously. Certain drugs, noticeably quinine and salicylic acid should be mentioned. Finally, diseases of the acoustic nerve, as the result of meningitis ; tabes, intracranial neoplasm rarely occur.

Very briefly now in reference to *Diagnosis*. The three salient subjective symptoms of disease of the labyrinth are deafness, usually excessive ; tinnitus, which may cease after a time, and vertigo. Objectively the diagnosis is based in primary disease of the labyrinth on the absence of all pathological conditions in the middle ear, and as the result of the examination by means of the tuning-forks. Aërial conduction is always preserved and in excess, while bone conduction is reduced or lost. (Rinné's law). This latter is of doubtful value, as unfortunately in a large percentage of cases of disease of the middle ear—46 to 77 per cent.—the same condition exists. Still greater weight is to be attached to the reduction or loss of hearing for the high notes in the tuning-fork series, especially for c^{iv} , low C in pure internal-ear disease being relatively little affected. Thus, in a series of 188 cases recently studied by the writer (*Archives of Otolaryngology*, Jan., 1897), representing all degrees of involvement of the internal ear, low C averaged for A. C. $17\frac{1}{2}$ seconds, and B. C. $9\frac{3}{4}$ seconds ; for c^{iv} , A. C. $5\frac{3}{4}$ seconds, B. C. 2 seconds,—or expressed in percentage, 43 % A. C., 60 % B. C. for the low fork, as against 28 % and 16 % for the high fork. Weber, Gellé, and Bing have also formulated observations which are helpful in certain cases. With all our improved methods of diagnosis, however, we are undoubtedly still liable to error in certain cases. This, without

doubt, is true in the statistics herewith presented. Authorities differ as to the frequency of involvement of the internal ear. Dowling (*St. Louis Medical News*, 1888) estimates 4 cases in 1000. In 2200 cases treated in the clinic of Dr. J. E. H. Nichols, there were 217 classified as diseases of the internal ear, *pure* or *mixed*. In the service of Dr. J. B. Clemens, out of 1700 cases, 127 were reported similarly affected. From the two services where a similar class of patients presented itself, and like methods of diagnosis were employed, there were, therefore, out of a total of 3900, 351 cases of disease of internal ear, *pure* or *mixed*, or 11 %. Of the 117 cases, service of Dr. Nichols, reported as primary disease of the internal ear, 13 alone were one-sided; among them, 12 were cases of presbycusis and 97 were mixed. In the combined services of the 351 cases, 176 were mixed. Omitting the 12 cases of presbycusis above mentioned, 163 cases of pure internal-ear disease remain for investigation. Ætiologically these 163 cases were divided as follows :

Tumor of the brain	1
Hemorrhage	7
Syphilis	17
Diphtheria	1
Typhoid	3
Quinine poisoning	1
Congenital	1
Inebriety	3
Malaria	1
Rheumatism	3
Sclerosis, involving both middle and internal ear	11
Middle-ear disease, with sudden extension into labyrinth	1
Middle ear, not sclerosis	9
Scarlet-fever	9
Meningitis	8
Syphilis (mixed)	1
Sclerosis (pure)	20
Measles	3
Ironworker	2
Anæmia	5
Hyperæmia	1
Boilermaker	2
Influenza	3

Telephone.....	1
Ménière's disease.....	6
Presbyacousis.....	1
Traumatism.....	7
Functional.....	3
Purulent otitis media.....	2
Cause not discovered.....	31
Unclassified.....	11

It will be seen that among these diverse causes infectious diseases take the most important place, and of infectious diseases syphilis is most common. More potent, however, than all the other causes combined, if we consider the 166 cases reported as mixed disease, is the condition popularly known as dry catarrh, which in the above classification is accountable for 20 cases, and 11 others designated as mixed in the above table doubtless belong to the same condition. To this group, moreover, most of the 31 cases, of which the cause could not be discovered, must be assigned.

Result of Treatment.—Of these 163 cases of pure internal ear disease (so diagnosed), 19 were cured or relieved. The remainder either underwent no treatment or showed no improvement. These 19 cases were divided as regards cause as follows :

Tumor of the Brain 1.—Vertigo relieved by iodide of potash and strychnine.

Syphilis 6.—Relieved by iodide of potash.

Sclerosis 1.—Relieved by electric masseur.

Ménière's Disease 2.—(a) Relieved by iodide of potash and Delstanche-masseur. (b) Electric masseur.

Anæmia 1.—Relieved by tonics.

Hemorrhage 1.—Relieved by iodide of potash.

Mixed 1.—Relieved by iodide of potash.

Functional 2.—(a) Relieved by tonics. (b) Treatment to middle ear.

Unclassified 4.—(a and d) Relieved by treatment to middle ear. (b and c) Relieved by iodide of potash.

To resume : in 12 out of 19, iodide of potash relieved.

Two—Electric masseur.

Two—Internal treatment (tonics).

To render, if possible, the study of these cases more complete, an examination was made of current medical literature through the files of the *Index Medicus* and of the *Archives of Otology*. This adds to the number of cured or relieved cases the following :

I. BARON, *British Medical Journal*, 1894, reports one case relieved out of four treated by pilocarpin. After thirty-five injections vertigo ceased and hearing improved.

II. GARNAULT, *Journal of Laryngology*, 1894, one case of sclerosis where tinnitus was relieved by removal of stapes.

III. BAUMGARTEN, *Zeitschrift für Ohrenheilkunde*, 1891. Case of internal ear disease in the mother contracted from child suffering from scarlet-fever, relieved by injections per tubam of potassium iodide, 0.2-10.0, and cocaine, 0.5-10.0, equal parts.

IV. SMITH, *Medical and Surgical Reporter*, 1891, reports 47 cases treated with pilocarpin. He obtained good effects in certain instances, especially in cases of specific origin. He advises its use only in tinnitus of recent date.

V. DOWLING, *St. Louis Medical News*, 1888, a case of Ménière's disease relieved by strychnine pushed to point of tolerance.

VI. FIELD, *British Medical Journal*, 1889, three cases of excessive deafness cured by pilocarpin injections.

VII. MCCALL, *Cincinnati Lancet Clinic*, 1890, Ménière's disease relieved by chloral and bromide of potash.

VIII. MOOS, *Archives of Otology*, 1884, scarlet-fever relieved by pilocarpin.

IX. POLITZER, *Wien. med. Blätter*, 1885, 17 out of 65 cases treated by pilocarpin injections relieved. Recommends this treatment especially in syphilitic cases and in cases of recent origin.

X. KOSEGARTEN, *Archives of Otology*, 1888. Used pilocarpin in 30 cases with benefit ; number benefited not given.

Here is a total of 26 cases cured or relieved, not including the cases of Smith and Kosegarten, where the number is not accurately stated.

In 22 out of the 26, pilocarpin was employed ; in 1,

strychnine ; in 1, chloral and potassium bromide ; in 1, tubal injections of iodide of potash and cocaine ; and in 1, stapedectomy.

CONCLUSION.

From the analysis of these various cases, what deductions are we at liberty to make ?

I. *Cause*.—The most common cause of affections of the internal ear is undoubtedly that condition known as sclerosis or dry catarrh.

Through the investigation of Politzer and others this is now known to be chiefly an ankylosis of the stapes in the oval window, and in bony alterations in the structure of the middle and internal ear immediately adjacent. This condition, as Bezold has shown, is much more common than formerly supposed.

It is equally true, however, that a considerable proportion of involvement of the internal ear springs from a simple hypertrophic catarrh of the middle ear.

As regards acute conditions, the infectious diseases seem to play the most important part.

Syphilis presents itself in one of three forms : (a) suddenly without apoplectic seizure ; (b) suddenly with apoplectic seizure ; (c) gradually and insidiously—this last is far the most common form.

Ménière's disease seems to be still a ground for conflict of opinion as regards its origin. Politzer insists in his *Treatise on Diseases of the Ear*, that it is caused by an exudate into the internal ear, with no previous involvement of the middle ear ; while Gradenigo in Schwartz's system makes it depend on a previous involvement of the middle ear. In either case it does not occur very often in this series of cases.

II. *Diagnosis*.—With our perfected methods of diagnosis we are still liable to error in a certain number of cases, and exceptions occur not rarely to the common rules. In this connection it is of interest to refer to the case of brain tumor, previously cited, where the post-mortem examination permitted an accurate investigation of the labyrinthine symptoms. It is taught by Politzer, Gradenigo, and others, that in disease of

the auditory nerve a break in the continuity of the musical scale is characteristic. The history of this case is briefly as follows :

Otto K., age 53 years, presented himself at clinic, February 1, 1894. He stated that four days ago he suddenly lost hearing in right ear—no previous attack. A self test showed watch in contact, formerly two feet or more ; no specific history. Examination of M. T. negative. Watch contact. Voice two feet. Tuning-forks—C $\frac{1}{2}$, c₃ $\frac{1}{2}$, c₂ $\frac{1}{2}$, c₃ $\frac{1}{2}$, c₄ $\frac{1}{2}$.

The left M. T. was sclerosed and drawn in. Watch, seven feet. Voice, thirty feet. Tuning-forks—C $\frac{1}{2}$, c₁ $\frac{1}{2}$, c₂ $\frac{1}{2}$, c₃ $\frac{1}{2}$, c₄ 9.

Patient complained of vertigo and tinnitus. Diagnosis was made of labyrinthine disease. The patient was treated with blisters, strychnine, and iodide of potash, and in December 18, 1894, reported tinnitus and vertigo gone.

Test at that time showed—watch $\frac{1}{2}$, voice fifteen feet plus. Tuning-forks—C $\frac{1}{2}$, c₁ 28, c₂ $\frac{1}{2}$, c₃ $\frac{1}{2}$, c₄ $\frac{1}{2}$.

Patient died on February 8, 1895.

The autopsy revealed a tumor in the upper temporo-parietal region extending forward to the left, probably sarcoma.

Paresis of the right side.

It will be noticed that, instead of any break, the series was well preserved. Bone conduction was by no means lost for any fork, and for the high fork was actually better than in the left ear. What is still further interesting, his symptoms were relieved and hearing restored, in spite of the fatal termination.

We will refer still more briefly, as of possible interest, to the tests in a case of hemorrhage of the labyrinth, seen three months after onset.

C. F., age 55, presented himself with the history that, in an attack of bilious fever, while vomiting, felt something break in the ear—great loss of hearing. Tinnitus and vertigo at once ensued, and have continued since. Here watch and acoumeter gave no response ; voice, 3 inches ; tuning-forks—C $\frac{1}{2}$, c₁ $\frac{1}{2}$, c₂ $\frac{1}{2}$, c₃ $\frac{1}{2}$, c₄ $\frac{1}{2}$; Weber in the better ear. Response to Galton's whistle normal.

This patient greatly improved under the use of iodide of potash. Here will be noticed virtual destruction of hearing, the loss of response to the intermediary forks, but the preser-

vation in reduced degree of the high and low forks alike for A. C. and B. C.—and, what is most striking in so typical a case as this, the response for Galton's whistle was perfect.

III. *Prognosis*.—It must be confessed that, except in syphilitic conditions, the prognosis of conditions of the internal ear, primary or secondary, as shown by the results in the above cases, is not very encouraging.

Out of the 163 cases reported, 19, it will be recalled, were cured or relieved—roughly, about 12 %. Of these 19, 6, or one third, were certainly specific, and 4 were possibly so, more than half.

In the cases investigated it will be noticed that no study has been made of the 176 cases of mixed disease. It can with great confidence, however, be asserted that the result of treatment in these conditions was alike discouraging.

IV. *Treatment*.—Finally, what can we learn as regards the plan of treatment in these conditions? In the report of successes secured by the several writers mentioned above, pilocarpin seemed to play the most important rôle. The only drug which seemed to be attended with any good results, in the 19 cases just mentioned, was iodide of potash. Treatment of the middle ear was beneficial in certain instances.

Beyond question, as regards infectious disease, the proper course is a prophylactic one, including careful attention to the mouth and naso-pharynx. In the case of actual hemorrhage or effusion, the most absolute freedom from all noise is to be insisted on. Local depletion and counter-irritations by means of blisters to the mastoid are indicated. Cardiac sedatives, and purgatives are in order. On the cessation of the acute symptoms, injections of pilocarpin are to be begun. The status of this drug, even after the number of years it has been used (12 years), has not been fully determined. Politzer, as noted above, advocated it, principally for specific conditions; but others have gone further, and employed it in all conditions, with varied success. Unquestionably, its greatest value is in the acute conditions.

Politzer recommends ten injections of ascending doses, of a 2 % solution, given daily; if, at the end of this time, no benefit

is obtained, the drug is to be stopped. Other observers have claimed that this time was altogether too short, and that their success has been achieved by continuing its use for at least seven weeks.

The case of Moos noticeably shows that it is of value in just such cases as are under consideration. In any case, we are justified in giving the drug a fair trial, but it is always to be followed by iodide of potash in full doses.

As regards the chronic conditions, our prognosis is well-nigh hopeless, and our treatment must consist, if we would even attempt any cure, in the use of internal medication, especially the use of the two drugs just mentioned. Surgical interference for these chronic conditions, such as removal of the stapes, as practised by Blake and Jack of Boston, has proven of no avail, and often aggravates the symptoms.

Mention must be made of the electric masseur employed by Dr. Clemens with benefit in certain cases. The principle is one of automatic massage to the drum and ossicles, very rapidly repeated by means of an electric current. Reference also must be made to the educational methods recently brought forward by Urbantschitsch, and used by him with benefit in a number of cases of apparent deaf-mutes.

To the large group of cases known as mixed, a trial of treatment to the middle ear by vapors, etc., is certainly warranted. And in certain cases a relief of the atmospheric pressure in the middle ear will greatly ameliorate tinnitus and vertigo, at least temporarily.

Any marked improvement or cure, however, can neither be expected nor encouraged.

HYSTERICAL DEAFNESS AND REPORT OF CASES.

BY F. PIERCE HOOVER, M.D.

DURING the past year, several of the above-named cases have been treated by me which had been previously diagnosed labyrinthine disease, and told they would be permanently deaf by those who had examined them. Two of these cases were regular habitues of clinics and dispensaries. In some, the deafness was comparatively recent ; in others, it was of years' duration. In not more than 3 or 4 cases did I learn, after much questioning, that the patients were of a nervous tendency, or that members of their family were predisposed to any nervous disorder. I speak of this, as I think a physician cannot gain *too* much information pertaining to a suspected case of the kind mentioned above. One case, of special interest to me, I had under my observation for a number of months, for labyrinthine disease of both ears, and only by chance did I find I was mistaken in my diagnosis, and then by the merest accident. One day, while examining her ears, my lamp chimney cracked. The patient, a woman 40 years old, jumped and looked round ; she claimed, however, she heard nothing. I did not believe the assertion, as only a few days before she could hear the voice, only at a very loud pitch and one foot from her ; watch and tuning-forks not at all. At next visit, being alone with the patient, I had my office boy come to me and say in a low voice, "That lady's dress is on fire" ; she at once screamed "Put it out quick," and ran from the room. I prescribed asafoetida pills, gr. v., three times a day, plenty of exercise, and fresh air, etc. Later, she went to Atlantic City and was greatly improved after an absence of two months.

Have used the battery with very good result for a short time *daily*, with outdoor exercise. Have had at least a dozen cases of the kind. Some patients would neglect themselves, believ-

ing they could never hear, or else were indifferent, having tried so many remedies, and paid out so much money for doctors' bills. Recently, I had a thin, emaciated man come to me, at Manhattan Eye and Ear Hospital, with a nervous twitching of his face and body, who stated that for the past four months his hearing was getting worse. He was impressed with the idea that he would lose his hearing entirely, and had felt for more than a year he would be like his aunt and grandfather, who were also deaf. The former, I learned, had typhoid fever when young, and the latter was 92 years old. Upon examination, I did not feel positive of my diagnosis of labyrinthine disease, although every indication would lead me to suspect it. After using every test, I deemed it advisable to have him attend the nerve clinic. He rapidly improved, grew stronger, and felt in many ways physically like another man; but, if he knew I desired to *test* his hearing, he always claimed he heard no better. I detected, however, that he really did hear, in various ways unsuspected by him; as, for example, dropping a pencil behind his chair, which he heard fall, and picked up.

Last December, a patient came to hospital for her "ears to be cleaned out, as she knew the wax made her deaf." I found canals clear; T. F. heard normally in both ears; watch, finger nails, and acoumeter heard not at all. She insisted I was mistaken in not finding wax, and left the clinic angry. She returned a few days later, with great pain and ear discharging. In her endeavor to pick out cerumen, she used a darning needle, and she had suffered ever since. When her ear had been cured of the discharge, her hearing returned. She insisted that the wax had softened by the "watery flow" from her ear, and thus was passed out when she was unawares, while lying or asleep on the affected side. At last visit heard watch 18 inches, voice 12 feet, and T. F. same as previously mentioned. In my opinion, this was another case of hysterical deafness. Other cases of the kind I could mention, but do not care to make this article too long. I only desire to impress upon the readers of the above, that they may sometimes run across such cases, and surmise they are of a more serious nature, as I was led to believe.

Hysteria usually, in my opinion, is a mild form of insanity, and is a symptom produced by morbid conditions, which may arise in the brain primarily, or from some depraved condition of the general system, more frequently seen in the female than the male. All but two cases under my observation were females.

A CASE OF ACUTE PRIMARY MASTOIDITIS, BILATERAL, WITHOUT ASCERTAINABLE CAUSE, OCCURRING IN A PATIENT WITH SLIGHT SCLEROSIS OF THE MIDDLE EAR ; CURED BY OPERATION.

MARCUS KENYON, M.D.

WHILE the following case presents many features of unusual interest to the otologist, it will be of still greater interest to the general practitioner, for certain reasons that will be obvious. Similar cases are much more likely to come within his field of observation than that of the specialist, and the main object in offering this report is to contribute toward facilitating a diagnosis which may be fairly termed difficult and very important. The case here presented is by no means unique, but is an exceedingly well-marked example of a departure from the ordinary course of an ordinary disease, viz., chronic catarrhal otitis media of the sclerotic form. An intercurrent, or more properly a reactionary inflammation, the symptoms usually being mild, is frequent in middle-ear sclerosis, and many attacks may recur in the same individual. The inflammation may involve the entire mucous membrane of the middle ear, or may be limited to a small circumscribed area, as the fenestra ovalis.

Reactionary inflammation occurring in sclerotic (interstitial) middle-ear affections begins either with or without a known exciting cause, as exposure to cold wind, sea bathing, la grippe, acute catarrhal rhino-pharyngitis, etc. There occurs a sudden reversal of the conditions which constitute the basis of the sclerotic process (enfeebled circulation and impaired vitality), hence the term "reactionary" seems most appropriate. This reaction consists in a heightened vascularity and over-activity of normal processes in structures so reduced in physiological capacity that even a normal circulation could not be properly

maintained. That such a reactionary inflammation may be chiefly, even entirely, confined to the mastoid process is demonstrated by the case here reported, which may be regarded as typical of its class.

On August 4, 1896, Annie K., age 22, applied at Dr. Lewis' clinic, in this hospital, in the service of Dr. Clemens, stating that one month previously she had some pain in the left ear which ceased in a few days, leaving her with moderate tinnitus, vertigo, and impaired hearing. Examination shows a pale, thin, depressed membrana tympani, and some retraction of the manubrium. The chorda tympani nerve with its investment of mucous membrane was plainly visible as a white parchment-like band. The neck of the malleus formed a prominence in Prussak's space. Shrapnell's membrane was pale and shrunken, the striæ prominent. There was no cicatricial tissue nor other evidence of former inflammation, and the patient was positive that she never had ear trouble before. Examination of nose and throat was negative, and the Eustachian tubes were normal. The diagnosis of chronic catarrhal otitis media was made. Treatment, politzerization, and gentle use of the Delstanche rarefacteur.

August 11th.—Complains of pain in left temple, side of head, mastoid, and ear. The slightest movement with the rarefacteur aggravates the pain in all those localities. Appearance of *mt* and canal unchanged. Slight tenderness at apex of mastoid. Politzerized. Rarefacteur discontinued.

August 13th.—Pain more severe in same locations, also pronounced vertigo, nausea, and vomiting. Pain has prevented sleep, and appetite is lost. Bowels were kept free by use of mag. sulph. At the tip of the mastoid a slightly enlarged lymphatic gland is very tender. Some tenderness above ear, and on post. part of mastoid. Temp. 100.4°, pulse 110. No change in *mt* or canal. The pain being distributed over an extensive area, and reflex in character, I consulted Dr. Terriberry, who concluded that it was all due to a mastoiditis. The patient was directed to rest in bed, apply three leeches to the mastoid, an ice-bag behind the ear, keep the bowels free, and take pilocarp. mur. gr. $\frac{1}{8}$ t.i.d.

August 15th.—Pain somewhat abated, but more paroxysmal in character; radiating to side of head, temple, and occiput. Mastoid slightly swollen and tender. A chain of slightly enlarged glands, tender to pressure, extends downwards and backwards, their size diminishing from the mastoid apex. No enlarged glands elsewhere. Vomiting and sleeplessness con-

tinue. Temp. 100.2° , pulse 116. Canal normal, *mt* unchanged. The patient was now admitted to hospital, put to bed, four leeches to mastoid, Leiter's cold coil, pilocarp. $\frac{1}{16}$, and quin. sulph gr. v. t.i.d. The quinine was suggested to eliminate the possibility of malarial hemicrania from the diagnosis.

August 16th.—Great pain in left side of head. Temp. 100° , pulse 99. Two leeches to mastoid. Antipyrine gr. v. every four hours.

August 17th.—Severe left hemicrania, remittent, with acute paroxysms. Slept less than an hour in last twenty-four hours, and strength is rapidly failing. Takes very little nourishment. Later in the day headache increased; the patient evidently suffering greatly. Mastoid now shows nothing abnormal except a very slight blush, and is a little tender on pressure at apex and post. border. The temple and side of head seemed more sensitive to pressure than the mastoid. After consultation with Drs. Van Fleet and Kinney, I decided to operate.

Operation.—The patient being anæsthetized, the usual mastoid incision was made. The periosteum and bone were both normal in appearance. The osseous structure was cancellous and firm until near the antrum, where the bone was red and softened. The mucous membrane was here very red and swollen. The most notable incident of the operation was a sudden welling up of dark blood almost as if the sigmoid sinus had been opened the moment the chisel entered the large cells near the antrum. The blood sprang up as if under great pressure. The antrum was then freely laid open, and all cancellous tissue, including the apex of the mastoid, was removed. The wound was packed and dressed and patient put to bed.

August 20th.—The temperature was 100° on the 18th, but fell to normal on the 19th, with pulse 80.

September 2d.—Since last date improvement has been uninterrupted. All vertigo, tinnitus, nausea, and vomiting have ceased, and there is but little pain.

September 12th.—Complaints of pain in other (right) side of head and region of mastoid. Temp. 99.6° , pulse 95. Examination shows *mt* unchanged, this being an exact counterpart of the left, with the addition of a small calcareous deposit. Canal is normal. Ordered four leeches to right mastoid, Leiter's cold coil, calomel gr. $\frac{1}{2}$ every hour until bowels responded, and hot water douche in canal every three hours, the patient to rest in bed on light diet.

September 13th.—Pain about same. Temp. 99.4° , pulse 80. Ice coil and hot douches continued. K. I. gr. x. t.i.d.

September 15th.—Temp. normal, pulse 80, no pain, but

some tenderness on right side of head and mastoid. Ice coil and hot douches discontinued.

September 19th.—Improvement continues. No pain, pulse and temp. normal. Operation wound of left side healing rapidly. Patient discharged, to report at clinic, and use K. I. gr. xviii. t.i.d.

September 24th.—Readmitted to hospital complaining of severe pain in right side of head, mastoid, and infra-auricular region, these parts being sensitive to pressure. Pain prevents sleep. Vertigo, nausea, anorexia, and stiffness of right side of neck. Temp. 100.2°, pulse 110. Four leeches to mastoid, cold coil, hot douches every three hours. Continue K. I., adding liq. pot. ars. gtt. ij. t.i.d., and rest in bed.

September 25th.—Ice coil increased the pain and hot applications were substituted. The *mt* is now moderately congested, the post. sup. quadrant slightly bulging.

September 29th.—No improvement. Temp. varies from 98° to 100°. The *mt* is considerably swollen, and four hemorrhagic bullæ appear on its surface. Pain is constant, subject to severe exacerbations. Ordered sodii brom. p.r.n., and a cantharides blister to mastoid. All other treatment discontinued.

October 7th.—Pain on right side of head very persistent. Sleeps but little, sedatives giving no relief, and is constantly becoming more emaciated, weak, and pale. Vertigo, nausea, and tinnitus are constant. The patient having manifested decidedly hysterical symptoms, Dr. Terriberry was again consulted, who stated positively that the hysteria was merely incidental, and by no means the real trouble. Examination of urine by Dr. Grant gave a negative result.

October 12th.—Pain and other symptoms worse. Mastoid slightly reddened, a little swollen and tender. Vomited today. The hemorrhagic bullæ on the *mt* are nearly absorbed, and the membrane has resumed its former pale and sunken appearance. Notwithstanding the favorable appearance of the canal and *mt*, it is apparent that the disease is progressive, and that the patient's vitality is constantly failing. After consultation with Dr. Van Fleet, who fully concurred, I decided to operate on the right mastoid.

October 13th.—*Operation* under ether anæsthesia. There was a fibrous periostitis of lower third of mastoid with periosteum adherent. Sigmoid sinus very close to canal, angular middle cerebral fossa, skull brachycephalic. All pneumatic structure in the mastoid process was thoroughly removed without any evidence of suppuration being found. The wound was then packed and dressed.

October 16th.—A few hours' earache to-day was followed by a purulent discharge from the aud. canal. On examination a perforation was found in the post. sup. wall of the canal leading into the antrum and operation cavity. The *mt* was not affected. This opening closed up in about ten days.

November 2d.—There has been no pain in head since the operation, and improvement is rapid. Discharged from the hospital to report at clinic.

November 24th.—Operation wound healed, and remarkable improvement in general health. Hearing for watch is $\frac{4}{8}$ by right ear, $\frac{1}{8}$ by left. Whisper heard 18 feet by right, 5 feet by left ear. Hearing power for ordinary conversational voice with both ears at once seems quite normal, and the patient says she hears perfectly well. All other symptoms have entirely disappeared.

Remarks.—A highly sensitive, firmly attached, unyielding muco-periosteum, lining the mastoid cavities and septa, extensive in area, richly innervated, and with branches of communication to other sensory nerves, are important conditions favoring local and reflex pain during mastoiditis. In the above case a potent cause of acute reflex pain was the exudation pressure in the antrum and large cells of the left mastoid. Hemicrania, so prominent in this case, is the rule in inflammation of the mastoid antrum or the atticus tympanicus. Fibrous periostitis and myringitis hæmorrhagica, due to the reactionary inflammation of sclerosis, are very painful affections. Vertigo, nausea, and vomiting result from irritation, hyperæmia, inflammation, exudation, hemorrhage, etc., involving the semicircular canals or ampullæ. Tinnitus is due to the same causes acting on the labyrinth, (the cochlear portion), or to anomalies of the sound-conducting apparatus—sclerosis in particular. Inanition and general prostration were induced by the constancy and severity of these symptoms, which interfered with nourishment, sleep, and exercise. Anæmia and a cachectic hue developed, with emaciation, and the facies betokened great suffering.

Regarding the final outcome, if not relieved by operation, it is apparent that this type of acute mastoiditis is a disease of serious import. With the invasion of pus-forming cocci a reactionary inflammation of the mastoid cavities would at once assume a formidable aspect, threatening life itself. No doubt such an invasion does occur in many instances, a purulent mastoiditis supervening. These considerations teach us that operative interference should be as complete as possible. Nothing short of a radical chiselling away of the pneumatic structure of the mastoid will suffice to give complete relief, or afford probable immunity from severe future attacks. In the

case here reported, even with no pus formation, the disease advanced to such a point as to give rise to anxiety because of its progressive and obstinate nature, and the marked change for the worse in the patient's physical condition. Perhaps I may be pardoned for suggesting that the symptom-complex presented, with the negative appearance of the auditory canal and *mt*, as well as of the mastoid, was well calculated to raise suspicions of some severe form of intracranial lesion, although certainly none existed. It is certain that many cases of cerebral abscess progress to a fatal issue with symptoms far less pronounced, though often similar to those which obtained in this case. Perhaps this type of disease will be well observed and classified in future, for otology is surely undergoing remarkable development and progress. Politzer,* speaking of sclerotic middle-ear disease, says: "As Von Tröltsch correctly remarks, there is no doubt that, through extension of our anatomical knowledge, this interstitial form of inflammation may attain to a separate position in the series of diseases of the ear."

I am under many obligations to Dr. James B. Clemens for valuable suggestions and assistance during the patient's illness and at the last operation.

* *Diseases of the Ear*, 1894, p. 275.

EXOSTOSIS OF THE SEPTUM AS A CAUSE OF CHRONIC NASO-PHARYNGITIS.

CHARLES H. KNIGHT, M.D.

ONE of the most obstinate and annoying disorders met with in the upper air tract is chronic naso-pharyngitis. Its prominent subjective symptoms are a sensation as of a foreign body above the soft palate and a frequent desire to clear the throat by the act of "hawking." The subjects of this condition are prone to attacks of acute naso-pharyngitis which may be very rebellious to treatment. They often form a peculiar habit of forcibly expelling short blasts of air through the nostrils in an instinctive effort to get rid of an obstruction. This little trick repeated at intervals of a few minutes becomes a source of great annoyance to the patients' associates. In an ordinary "cold in the head," which everyone has at times and almost everybody neglects as being a trivial affair, the naso-pharynx usually becomes involved earlier or later. As a matter of clinical experience, we find that attacks of acute naso-pharyngitis are exacerbations of a chronic condition and are encouraged by the existence of some nasal abnormality, such as a septal deflection, or an hypertrophy of the posterior end of the inferior turbinated body. The relation of naso-pharyngitis to lymphoid hypertrophy in the vault of the pharynx, to inflammation of the pharyngeal bursa, and to suppuration in the accessory sinuses, is by no means infrequent, and many cases on careful examination will prove to have their source in one or the other of these pathological states.

What is believed to be a very common etiological factor in post-nasal disorders, and one easily overlooked in the usual rhinoscopic examination, is *exostosis of the septum*. It has been my frequent experience to meet with cases of obstinate "post-nasal catarrh," so-called, associated with a tendency to "catch cold," which yielded only after the removal of a conical pro-

jection from the bony septum so situated as to interfere with breathing or drainage. Such a projection may assume the form of an irregular ridge running forward more or less parallel with the floor of the nose, and impinging upon or even adhering to the inferior or middle turbinated body. Under such circumstances, it can hardly escape detection. It may be concealed by an anterior turbinated hypertrophy, or a deviation of the septum, and may be discovered only by the use of cocaine and the probe. No rhinoscopic examination is complete without recourse to these aids to diagnosis.

It is uncertain whether these exostoses of the septum originate in traumatism or result from hypernutrition. They are seldom if ever met with in early life, which hardly would be the case if the former were the sole cause. Moreover, they are found far back upon the vomer in a situation supposed to be especially protected from injury. Behind such an obstruction there always exists a more or less extensive area of hyperæmia owing to rarefaction of the air during inspiration. This region, is therefore, more susceptible to the influences which are usually recognized as conducive to an acute naso-pharyngitis. The disturbances due to diminution in air pressure are perhaps less serious than those dependent upon impeded nasal drainage. In other words, a very considerable bony obstruction may exist without marked derangement of the nasal respiratory function. Either its growth is so slow that the patient becomes habituated to it, or else the opposite nostril is so ample as to compensate for the stenosis, or possibly it may be quite above the level of the air current. Such a projecting shoulder offers a site for the lodgment and retention of secretion, which in process of decomposition becomes an additional source of irritation. The indications are therefore clear in every case of chronic naso-pharyngitis—in the first place, to supplement simple inspection of the nasal chambers by exploration with the probe after thorough cocainization, and, secondly, to remove all overgrowths from the septal surface which seem to obstruct respiration or drainage. The latter statement may seem somewhat radical, but I believe it may be accepted even by those conservatives who deprecate the unwarrantable ac-

tivity in nasal surgery which has prevailed in recent years. Whatever good may be accomplished in certain cases of catarrhal disease by the list of astringents and various local applications usually recommended, they will fail to give permanent relief when the mechanical obstruction referred to exists as an etiological factor. In every case of intractable and recurrent naso-pharyngitis, it should be sought for, and, if present, removed.

I hope that my position on the question of intranasal surgery may not be misunderstood. It is very far from my intention to urge the removal of every septal irregularity. On the contrary, I believe it is high time that we should learn to have more respect for the intranasal structures. No one condemns more heartily than myself the wholesale slaughter of turbinates which may seem to be simply a little larger than our esthetic taste demands. But, on the other hand, there can be no good reason in attempts at preserving a membrane which has undergone polypoid degeneration or is in a state of such advanced hyperplasia that its function is wholly abrogated. The late Dr. Henry Schweig, of this city, many years ago advocated the plan of "submucous cauterization" of the hypertrophied turbinates, and for the purpose used a sharp-pointed cautery electrode. The idea has been lately revived by Blondian,* and in another form by Dr. Norval H. Pierce, † of Chicago. Efforts in this line are certainly most commendable, provided they be limited to tissues which are still useful. There certainly can be no sense in trying to save those which are practically foreign bodies. The advice is sometimes given to trim down the turbinated bodies rather than meddle with a deformed septum in cases of nasal stenosis, the impression being that the septum is particularly resentful of surgical interference. In cases of the class referred to in my paper I believe there should be no hesitation in choosing to attack the septum. In my experience these wounds do well. Examined months and years after operation no trace of the original trouble can be seen except perhaps a slight bulging of the septal surface. Hemorrhage at

* *The Journal of Laryngology*, etc., Dec., 1896, p. 333.

† *The N. Y. Medical Journal*, 1896, No. 938.

the time of operation, or after the cocaine effects have passed away, is often quite free, but only on two or three occasions have I found it necessary to plug the nostril. Under the use of a fresh, strong solution of cocaine the removal of an exostosis may be accomplished absolutely without pain, unless the patient is the unfortunate victim of an idiosyncrasy which resists the anesthetic effects of the drug. Some of our patients seem to enjoy the distinction associated with a surgical operation, while others dread the knife and will submit to months of treatment with sprays and medication rather than take the chance of pain. It is a satisfaction to be able to assure such individuals that no great amount of pain need be apprehended either during the operation or afterwards. The increase in comfort, as regards nasal breathing, and the relief from symptoms following the removal of one of these septal deformities are generally admitted to be full compensation.

In conclusion, let me say a few words regarding the method of removing an exostosis. When its projection from the surface of the septum is abrupt, there is but little difficulty in operating with a handsaw. And in most cases a saw, preferably one of the pattern known as Bosworth's, is a convenient instrument. If the base of the bony spur is shelving, the saw should be started in an oblique position, its teeth being directed towards the septal surface. When once it has made a furrow through the soft parts, it may be brought to a vertical line without danger of slipping. In order to obviate stripping up the mucous membrane at the completion of the section, it is a good plan to make a preliminary cut from below upwards, the main division of the bone being made from above downwards. The various electric saws, devised or modified by Roe, Schmidt, Potter, Black, and others, are very ingenious, and are thought to have the advantage of doing the work more quickly. In exostoses of unusual width, it will be found easier to tunnel through with the electric nasal trephine and afterwards trim off the projections left by the trephine with cutting forceps or the saw. Exostoses of moderate extent, which have not become densely ossified, may be removed with the spoke-shave or ring-knife, but I am almost prepared to say that a septal

excrescence which these instruments are capable of removing, does not require interference. Bony outgrowths often offer too much resistance ; soft hyperplasiæ are better reduced by means of the electric cautery.

Nothing has been said about the relation of septal exostosis to reflex neuroses, or to various aural disturbances, not because it is by any means infrequent or unimportant, but because this phase of the subject opens too wide a field for discussion at the present time.

AN OPERATION FOR THE CORRECTION OF EXTERNAL AND INTERNAL DEFORMITIES OF THE NOSE, CAUSED BY DEFLECTION OF THE CARTILAGINOUS NASAL SEPTUM.

H. HOYLE BUTTS, M.D.

PERHAPS no one condition in the human nose has withstood the onslaught of the modern rhinologist more persistently than that of a markedly deflected cartilaginous septum. Numerous and ingenious have been the operations devised and carried out to place back, in its straight and narrow path, this obstinate but misguided support to the external structure of the nose. Rhinological literature for years has teemed with descriptions of new operations which promised to successfully bolster up twisted and distorted septa, and as each new method was promulgated there have been found expectant followers to test its worth and power of endurance.

It is not too much to say of these buried hopes, that they accomplished their purpose for the time being, and then gradually permitted a return of the conditions that existed before operative methods were brought into play. Selecting any one of these methods at random, and conceding that an operator was able to follow out the technique, as suggested by the originator, there has always been one invincible test to be applied to it, namely, that of time, before a claim for success of the operation could be established.

Many operations have been performed during the past fifteen years that seemingly assured enduring results and justified one in believing that, at last, one could promise to straighten, permanently, a deflected cartilaginous nasal septum.

Mournful to relate, the result has been more or less of a disappointment, as evidenced by a return of the patient to the clinic, say, six months later, with a dejected face, an occluded

naris, and a reappearance of all the symptoms that had caused him to seek relief at the surgeon's hands. Naturally enough, a weary repetition of experiences of this nature has made the older generation of nasal surgeons a trifle sceptical about the merits of any new operation for the correction of septal deflections, especially when it is claimed for a particular one, that it need never be followed by failure.

Without going into details as to the comparative value of the methods of operation as suggested by Gunn, Bolton, Chassaingnac, Steele, Jarvis, Roe, Daly, Adams, and others, I would like to call attention to a paper read by Morris J. Asch, M.D., at a meeting of the American Laryngological Association, held in Baltimore, Md., May, 1890. At that time Dr. Asch claimed for his method of operating on a deflected cartilaginous nasal septum, that it would insure a stable correction of the deformity and a cessation of the symptoms due to that condition.

Clinical notes that are accessible, and have been made since the reading of that paper, showing in the neighborhood of sixty (60) operations, performed by the writer of this paper and his confrères at the Manhattan Eye, Ear, and Throat Hospital, confirm the statements made by Dr. Asch at that time. Failures there have been to the number of three, averaging less than one apiece for each member of the hospital staff who has tried the operation. Two of these failures were the result of the initial trials of the method by two members of the staff, and, as acknowledged by these gentlemen, were due to their not thoroughly carrying out the technique as prescribed. The third bad result was caused by being compelled to abandon the after-treatment on account of an acute otitis media that manifested itself a few days after the operation. It was an error of judgment on the part of the writer in advising and performing an operation at that time, as the case was that of an undersized, poorly nourished Italian lad, seven years of age. One year later, having built up this boy's system with tonic treatment and proper diet, he was again subjected to an operation, which was a marked success, and to-day, three years afterward, his cartilaginous nasal septum is in its proper place.

In reference to the test of time that has been mentioned

elsewhere, it may be said that if at the end of one year from the date of discharge from treatment the patient shows a septum that is in the same upright position that it was placed in at the operation, it may be fairly regarded as a successful result.

There has been some slight change made in the operation, as at first outlined, but the principle of a crucial incision and its application, with a thorough destruction of the resiliency of the cartilage, has always remained the same and insured a good result.

The readers of this paper are referred to the original article by Dr. Asch, published in the *Transactions of the American Laryngological Association*, 1890, for the history and early methods of after-treatment as then practiced by him.

The routine method described here is the one that has been followed at the Manhattan Eye, Ear, and Throat Hospital since 1891.

The patient, lying on his back, having been etherized to a point bordering on complete anæsthesia, his head is brought well over the end of the operating table, so as to be slightly dependent. This position of the head is necessary to facilitate the escape of blood from the nose and pharynx by gravitation, and to decrease the liability of its entrance into the larynx and trachea. The ether cone being removed, the head of the patient is held firmly between the hands of the anæsthetizer, and the operator introduces a little finger into the stenosed naris, to determine the point of greatest convexity of the cartilaginous septum. If this is found impossible on account of existing adhesions between the septum and the lateral wall of the nasal fossa, a curved gouge is used to sever the obstructing bands of tissue. Having located the point of greatest deflection, the operator carries into the stenosed naris, the non-cutting blade of the Asch scissors, and the other and wider blade into the opposite naris. The incision is then made through the septum by approximating the handles of the instrument, and is accompanied by a snapping sound that is characteristic of the completion of the act. On the proper performance of this first incision is dependent, to a great ex-

tent, the result of the operation. It should be made *parallel with the plane of the floor of the nose and through the point of greatest convexity of the septum*. The hemorrhage is decidedly brisk from now on, but, as the patient is by this time only in the primary stage of anæsthesia, with a restoration of the reflexes, no danger of asphyxiation from inspired blood need be feared. The second incision is now made, with another pair of scissors (slightly different in construction from the first), *at right angles to the previous one and intersecting it as nearly as possible at its centre*. The patient is now turned over on his side and the accumulated clots of blood allowed to flow from his pharynx and nasal fossæ; a little more ether is given and after a return of the patient to his former position, a pair of Adams septal forceps are introduced, one blade in either nostril, and each one of the four fragments of cartilage is seized in turn, separately, and subjected to a twisting motion, *sufficient to loosen its articulation*. In this way all resiliency of the cartilage is overcome, and on passing a finger into the previously stenosed naris, it will be found that all resistance has disappeared and the finger can be easily carried through into the posterior naris. If it is not perfectly free, the Adams forceps should be reintroduced and the refractory fragment submitted to the same process as before. If the resiliency of the cartilage be not *thoroughly destroyed*, the object of the operation will be defeated.

The amount of traumatism capable of being borne by the septal cartilage of the nose, without untoward effects, is simply astonishing, and for that reason one need not be timid about attacking it with vigor.

When the previous step of the operation has been satisfactorily completed, one of the patterns of vulcanite perforated nasal tubes, devised by Asch, and modified by McKernon, is then inserted in the formerly obstructed naris. Care should be used, in choosing a tube, to see that it is sufficiently large to hold the septum in the position desired, and, at the same time, it should not be of such proportions as to cause painful and uncalled-for pressure. A tube so large that it requires any considerable amount of force to place in position, will surely

cause an intolerable degree of pain to the patient when consciousness is regained. Whereas, one of a proper size will be worn without the slightest discomfort to the patient.

After the introduction of the tube, hemorrhage ceases spontaneously and the patient is put to bed for thirty-six or forty-eight hours. Twelve hours having elapsed since operation, the nasal chambers are irrigated with a warm borated solution at intervals of two hours; the temperature is taken three times daily, and a rise of from one-half to one degree is sometimes observed on the first and second days. The tube is removed at the end of the third day, and the nasal fossæ sprayed with a ten per centum solution of cocaine to shrink the soft parts, and a thorough cleansing is given with a gentle alkaline spray.

Usually there is considerable swelling of the intra-nasal tissues, but the tube is readily re-introduced, and the patient allowed to go about his usual pursuits; he should be seen every other day for some time, and after the first week is instructed to remove the tube himself, morning and night, for cleansing purposes. The tube should be worn for at least six weeks to give an opportunity for the thorough union of the parts.

Inspection of the intra-nasal conditions for the first week after operation is apt to be somewhat disheartening to the operator, from the fact that there is a good deal of inflammatory reaction of the soft parts and the overlapping of the segments of cartilage causes decided impairment of the calibre of the naris. However, an occasional cleansing and spraying of the membranes with a solution of oil of eucalyptus in fluid alboline, and the mild pressure exerted by the nasal tube, induces an absorption of the redundant cartilage and soon clears up the field.

If there is an enormous ecchondrosis over the apex of the convexity, it may be advisable to saw it off either before or at the time the septum is fractured under ether; thickening to a moderate degree at this point will not require an operation for removal, but will be dissipated by the presence of the tube.

The special instruments devised by Dr. Asch are an undoubted aid to the proper performance of the operation, not only allowing a quicker and neater execution of it, but a much more accurate placing of the incisions.

Still, if one has not the instruments at hand, it may be done with a bistoury (using a finger in the patent nostril as a guide to the length of the incisions) and an Adams septal forceps. In selecting an Adams forceps, one with blades not more than an inch and a quarter in length, and that do not tend to converge at their distal ends, will be found most useful in grasping the fragments of cartilage.

Frequently the nasal surgeon is consulted about, and is requested to remove, the unsightly external deformity caused by a deflected cartilaginous septum that has so outgrown its normal limits that it has twisted the tip of the external nose to one side of the face. In these cases the subjects are apt to be much more interested in the correction of the deformities for the cosmetic effect, than in the amelioration of special symptoms.

My practice has been in such cases to carry out the operation as previously described, and to supplement it with an incision, with a bistoury, along very nearly the whole length of the upper two fragments, where they join the soft tissues covering the dorsum of the nose. This extra incision gives a greater opportunity for the readjustment of the fragments when the forceps are applied and the tip of the nose is brought into the median line. In a few of these cases it will be found of advantage to augment the pressure of the large tube in the stenosed naris, with a much smaller one in the opposite side.

There can be no gainsaying the necessity for a reliable surgical procedure that will correct a deflected cartilaginous nasal septum. One has only to pass in review in one's mind the local and remote disturbances produced by a much deflected nasal septum, to acknowledge the desirability of being able to restore it to its proper place.

The writer does not believe that, simply because a nasal septum is slightly deflected or is not symmetrical, it must be operated upon. It is only when one or more of three conditions

are present that surgical interference should be thought of and used. These conditions are as follows :

I. When the respiratory function of a nasal fossa is seriously impaired or entirely lost.

II. When drainage of the secretions from the mucous membranes lining the accessory sinuses or nasal fossæ is impeded.

III. When there is contact of the septum with adjacent structures that cannot be overcome by simple methods, such as cauterization, snaring, curetting, and trephining with the electro-motor.

A simple enumeration of the symptoms that are produced by the foregoing conditions may, in a measure, justify the amount of space taken by this article :

Mouth-breathing, caused by occlusion of one or both nasal fossæ.

Drainage of the secretions of the accessory sinuses and nasal fossæ into the post-nasal space.

Perverted or hyper-secretions in the nasal cavities.

Headaches, frontal and occipital.

Diseases of the accessory sinuses.

Catarrh of the Eustachian tubes.

Chronic rhino-pharyngitis and laryngitis.

Rhinitis vasomotoria periodica.

Asthma ; reflex.

Spasmodic stricture of the œsophagus ; reflex.

Epilepsy ; reflex.

Chorea ; reflex.

The operations on which the conclusions of this paper are based were, for the most part, undertaken for the relief of the common, "every-day" symptoms of mouth-breathing, inability to clear the nose of retained secretions, headaches, and impaired hearing.

THE ELEMENTS OF SUCCESS IN DEFLECTED SEPTUM OPERATIONS.

BEAMAN DOUGLASS, M.D.

THESE may be divided, first, into those particulars which should be looked after before the operation ; the second special points which at the time of the operation determine the successful replacement of the deformed cartilage ; and third, the care of the patient subsequent to the operation, the management and cleansing of the splint, and length of time necessary to wear it.

These elements are all very important in determining the success of this operation. Doctor Asch some years ago published an article in which he described an operation for the correction of this deformity, which has been modified by other surgeons, and is to-day as performed by Doctor Asch an excellent operation. Particular points in the operation have been noticed in the paper by Doctor Asch, read before the New York Academy of Medicine. Complete and satisfactory in its results as Doctor Asch's operation may be, it has disadvantages : the instruments are expensive, and he has omitted anatomical details which are of importance, as will be noticed farther along.

Particulars which should be attended to before the operation : The removal of abnormal thickening of the septum-exostoses and ecchondroses. It is of special importance that these excrescences be reduced and the septum present an even surface before the principal operation is attempted or there may be some defect in the support of the splint and an unsatisfactory result. These excrescences can best be removed by means of the saw or the cutting forceps, and enough time should elapse prior to the subsequent operation to allow complete healing and the subsidence of granulation tissue.

The patient having been etherized, the finger, well oiled

is introduced into the nares ; the examination by means of the finger will determine the convexities and concavities in the septum, *and will show the lines where the septum has been previously bent or where fracture has taken place.* This examination will also show if there are any other thickenings which have not been discovered, but may exist behind the deflection. The finger should discover the ridges which may exist, and should determine whether there are one or more deflections and whether these ridges join each other or are separate. I have seen a case apparently simple where the deflection consisted of a horizontal ridge, and joining this at an angle the finger discovered another ridge leading upward and backward, which was as much an element in the deflection as that which was discoverable by visual examination. It is of great importance, and this particular is omitted in the description of Doctor Asch's operation, that the examining finger, while



FIG. 1.

searching for the deflection, should ascertain *whether the triangular cartilage joins the superior maxillary bones*, and whether this maxillary ridge has not been deflected, or fractured, and displaced. We know that the cartilage and the vomer are joined to each maxillary bone by a slight ridge, which springs from the point of union on each side ; and I have seen cases where the operation has been but partially successful in producing a straight septum because this deflection existing on the floor of the nose has escaped the observation of the operator.

Having then determined carefully the relations of the angles of deflection to each other, the knife which we designate as the spear knife (Fig. 1) is introduced into the obstructed side, while the finger feels for it through the free side. The most posterior point of deflection, with the aid of the finger guiding on the opposite side, is easily determined when the spear knife has reached such a point. The knife is then turned and pressed into the septum, the point being felt through the sep-

tum, which it perforates, by the finger in the opposite nostril. This perforation should be at the posterior point of deflection.

An incision is then made following the line of deflection, or the ridge of deflection, and the knife withdrawn. A second knife is introduced into the incision made. For this work I have used a blunt-pointed bistoury (Fig. 2) and drawn it for-



FIG. 2.

ward until it reaches a point which is not deflected. It is usually necessary to bring this knife as far forward as the vestibule of the nose. If the examining finger discovers other ridges of deflection joining this particular deflection, the knife should be re-introduced and carried through these ridges *until each is cut to its most remote point.*

After this has been accomplished, the septum will present one or more cuts, which I wish it clearly to be understood are along the lines of deflection and entirely through the substance of the cartilage. This leaves the septum in a thoroughly divided condition along the angle of its distortion.

Ascertain whether the deflection from the superior maxillary ridge exists, and if so, it should be treated in one of two ways



FIG. 3.

If the deflection at the floor of the nose consists of a displacement of the bony ridge and cartilage, an attempt should be made to break the bone free from its improper attachment by means of the forceps, which are here shown, (Fig. 3) and are slightly modified from the old Adams forceps. If the bony ridge is not dislocated with the cartilage, but, as is frequently

the case, the cartilage has slipped from its articulation, obstructing the floor of the nose on either side, it should be treated as a deflection of the cartilage, the knife being introduced at the junction of the cartilage with the vomer and drawn forward horizontally to the anterior border of the cartilage.

The next step is the destruction of any elastic bands which may exist in the submucosa, as a result of the inflammatory action accompanying the old fracture. These adhesions should be thoroughly broken up by introducing the blades of the forceps on either side and quite forcibly twisting the septum with a rocking or rolling motion, until all adhesions are thoroughly destroyed and the cartilaginous septum is freely movable.

The third point of importance is the forcible bending of the septum away from the side which has been obstructed. This causes an overlapping of the cut edges, and should be done



FIG. 4.

before the splint is introduced. It is easily accomplished by introducing a finger into the side obstructed, the overlap occurring on the concaved side. The bony septum should be explored, and if there are prominent deflections, these should be broken with the forceps.

The hemorrhage may have been quite profuse, but is usually controlled by the splints, which are now introduced. These materially differ from the splints used by Doctors Asch and Mayer, being made of vulcanized rubber with straight lower borders. The inner ends of the splints are smaller than the outer ends, which are made to catch the upper part of the ala nasi. The side of the splint which is next to the septum has a nearly plain surface; the side next to the inferior turbinated bone is concave. (Fig. 4). The splint is not perforated, as are the Asch and Mayer tubes, for I have found the holes a disadvantage in keeping the splint clean. Mucus and

pus will collect inside the splint ; and while it is easy to clean them from the inside, it is difficult to cleanse each hole and make the splint absolutely aseptic, whereas an unperforated surface cleans easily. I have not found that these holes facilitate drainage in any way ; they fill with granulation tissue, and do not drain away the discharges ; the perforated splints do not retain their position any better than those unperforated.

A splint is introduced in each nostril, the larger splint being placed upon the previously obstructed side. This should fit closely, but should not press the septum too far over. The second splint is necessary to hold the septum in a correct position.

The after-treatment of these cases is important to the ultimate success. Unfavorable results are almost unknown if the splints fit properly and they are not uncomfortable to the wearer. The patient should be kept in bed twenty-four hours, and the splints not be removed for forty-eight hours, unless some urgent necessity demands. The urgency might arise from pain, headache, swelling of the nose, or excessive secretion, which it would be impossible to remove by washing.

During the first twenty-four hours the nose should be irrigated twice with a hot normal salt solution. This may be accomplished by a large ear syringe, or Davidson bulb syringe, the head being thrown well forward, the patient breathing through the mouth. If this is carefully done, the fluid will be thrown through one nostril and out through the other. The splints should be previously wiped with cotton.

At the first removal of the splints, the septum should be examined and its condition noticed. If it bulges to either side, it should be replaced by means of a periosteal elevator which I have found useful for this purpose ; the broken fragments will easily resume the correct position, and the splint can then be introduced.

While the splint is out, the nostril should be irrigated and the splint carefully cleansed with an antiseptic solution. Oil it before reintroducing it. In replacing the splint take care that it holds the septum in proper place.

After four days, the splint which has been introduced into

the freer side may be removed and left out, one splint being worn in the formerly obstructed side. This should be removed every day for a week ; afterwards every second day, for cleaning and antiseptic irrigation of the nose. It should be worn for three weeks, and then it may be left out during the day and worn for one or two weeks longer at night only.

I have seen cases where the deflection has recurred as a result of the patient's rolling on his face while asleep. I therefore recommend wearing the splint at night longer than is necessary during the day.

A complication which may arise while the splint is being worn is the presence of exuberant granulation tissue. This should be treated by nitrate of silver, applied as caustic to the granulated surface.

A bad position of the splints may cause discomfort to the patient and injury to the septum. This may be avoided by using little force when introducing the splint.

I have tried to explain in this article the principal means of success in this operation as I have practised it in my hospital and private work. The work has given entire satisfaction, resulting in relief to the patient and restoring the perpendicular line of the septum.

In addition, external deformities, such as angular and tipped noses, have been markedly benefited, and I consider the success due to the thorough cutting to which the septum is subjected in this operation, and to the correction of the deflection which may occur from the superior maxillary ridge.

RETRO-PHARYNGEAL ABSCESS.

CARL E. MUNGER, M.D.

THIS disease, which is known as post-pharyngeal abscess, retro-pharyngeal abscess, phlegmonous pharyngitis,¹ retro-pharyngeal suppurative lymph-adenitis (Casselberry and Browne), and peri-pharyngeal abscess, is of interest because it is comparatively rare, has a high mortality unless recognized, and is usually susceptible of a cure if it comes under treatment before the patient is quite moribund. As suggested by the above names, this is a disease affecting the lymphatic glands and cellular tissue lying between the mucous membrane of the pharyngeal wall and the anterior surface of the cervical vertebræ. At the beginning of a consideration of this subject, we are confronted with this fact, that while it is a disease which occurs at all ages, we find that while the cases as they occur in childhood present a history which is fairly common to all cases, or we can at least group them into two large classes, the cases occurring in adults are apt to be cases each *sui generis*, having its own etiology, course, and symptoms.

Flint² says acute pharyngitis giving rise to inflammation and suppuration in the areolar tissue between the mucous membrane of the pharynx and the cerebral column constitutes the affection called retro-pharyngeal abscess. This statement is true, however, only for the cases occurring in adult life, as in infancy and childhood, periods of life at which a large proportion of these cases occur, there are in this same situation a preponderance of lymphatic glands, which glands are the seat of the affection. This condition of things is insisted upon by Bosworth,³ and as early as 1851 Allen⁴ made this statement: "In children, in nearly all cases the disease is traceable to inflammation, enlargement, and suppuration of the lymphatic glands behind the pharynx or to caries of the vertebræ."

A classification of these abscesses given by Idelsön⁵ in a

résumé of a paper written on the subject by Sokolof, of Moscow, is of interest, being based on forty cases of typical retro-pharyngeal abscess, and sixteen of retro-pharyngeal lymph-adenitis, and I will take the liberty of quoting.

He divides these cases into the following groups :

1. Single congestive purulent gatherings in the retro-visceral cervical space, which arise in connection with various inflammatory processes in its vicinity (cervical phlegmon, inflammation of cervical lymphatic glands, periostitis of adjacent bone, parotitis, etc.).

2. Tubercular congestive purulent accumulations developing in connection with cervical spondylitis.

3. Proper retro-pharyngeal abscesses due to inflammatory processes in the space itself. The latter category may be subdivided into three groups ; (A) traumatic phlegmon of the retro-pharyngeal cellular tissue, which is caused by a direct inroad thereinto of pathogenic microbes ; (B) metastatic inflammation of the tissue, produced by the microbes penetrating through the circulation (in cases of small-pox, typhoid fever, scarlatina, etc.) ; and (C) suppurative retro-pharyngeal lymph-adenitis, which is induced by the microbes travelling along lymphatic vessels (and arrested in the glands), and constitutes the so-called idiopathic retro-pharyngeal abscess of children.

The causes of retro-pharyngeal abscess are (*a*) predisposing and (*b*) exciting. The cases may be divided into those occurring in *infancy and childhood* (which may be either acute or chronic), and those occurring in *adult* life, which also may be either acute or chronic.

Of the predisposing causes in the acute cases of infancy and childhood, may be noted, heredity, scrofulous tendency, syphilis, and the exanthemata ; the exciting cause, exposure to cold and damp air.

In the chronic cases in children we find that a large proportion owe their origin to caries of the cervical vertebræ.

In the adult cases, the predisposing causes are, for the acute cases, similar to those occurring among children, with the addition of intemperance.

The exciting causes of acute retro-pharyngeal abscess, as we meet with it in adult life, are numerous and varied : exposure to wet and cold, lodgment of a bone in pharynx, blow with a foil,⁸ erysipelas, fall on inferior maxilla, cerebritis, syphilis, and mumps ; and lastly, there are a number of cases which are called idiopathic.

The symptoms in young children are fever, restlessness, pain on swallowing, and the peculiar voice, which has been called the "voix de canard,"⁷ or "cri de canard,"⁸ a sound resembling the quack of a duck, and, later, dyspnœa ; but in certain cases, where the abscess is retro-œsophageal, deglutition is performed with comparative ease, the dyspnœa is quite marked, as obtained in cases quoted by Bosworth,⁹ from cases reported by Ripley, Turner, and Chapin, the explanation being that the bolus of food pressed the soft sac of pus to one side, while the tracheal wall yielded before the abscess, tracheal obstruction resulting.

The symptoms in adults are principally pain, which is constant and continuous, and difficulty in deglutition. There is usually a febrile movement of moderate severity, and that is about all.

The *objective* symptom is, *par excellence*, the bulging post-pharyngeal wall, tense and more or less swollen, and giving a sensation of fluctuation or elasticity, which is not to be met with in the normal throat. In children, the peculiar way in which the head is held has been considered pathognomic,¹⁰ it is in a fixed position and inclined forward and to one or the other side, away from the abscess, if the latter is unilateral.

As to the course and duration of the disease, it seems to be progressive and not self-limiting ; pus has probably been present in many cases for weeks without recognition, indeed, there are recorded cases where the post-mortem alone¹¹ has revealed the cause of death. There was in the Museum of the College of Physicians and Surgeons, N. Y., a pathological specimen, described by W. H. Van Buren¹²—age of patient, six months ; abscess not opened ; death from exhaustion ; the "abscess passed behind the pharynx, enclosed in a dense cyst, lying on the bodies of the cervical vertebræ and in contact with the basilar process."

The duration of unrecognized fatal cases has been estimated as from one week to nine months."

The prognosis is usually grave if the disease is undetected, and the sweeping statement has been made that "acute cases, if not recognized are fatal."

Retro-pharyngeal abscess may be confounded with croup, œdema glottidis, aneurism, and tuberculosis of the retro-pharyngeal lymphatic glands.

From croup it is to be differentiated in that the dyspnœa in croup comes on early ; the voice is at first hoarse, then weak and whispering ; there is a peculiar cough, and the dyspnœa is partially relieved by having the head low, while in retro-pharyngeal abscess the dyspnœa if present comes on late in the disease, and is increased if the head is low, and the voice has the peculiar character referred to.

From œdema of the glottis, in that in this disease the dyspnœa is on inspiration, and the swelling is in front, while in retro-pharyngeal abscess the dyspnœa is continuous and the swelling is posterior.

From tuberculosis of the retro-pharyngeal glands, the abscess is differentiated in that, in the former disease,"¹⁴ (1) there is a simultaneous presence of tuberculous lesions of deep lymphatic glands on the corresponding side of the neck ; (2) the affection persists for months ; (3) the retro-pharyngeal swelling cannot be reduced in size either by punctures or by incision.

The dangers of this disease, if unrecognized, are : asphyxiation in children, due to the pressure on larynx and trachea, or by a rupture of the abscess and a flooding of the larynx with pus, or gradual loss of strength, or septicæmia."

Treatment.—This is detection of pus and opening of the abscess. There are two methods : the internal incising of the abscess, and reaching the pus from the outside. Each method has its adherents. In a broad way it may be stated that the general surgeon prefers the external method, opening either before or behind the sterno-mastoid muscle, and the laryngologist prefers the internal incision. Again, it may be said that the preference at present is for the internal operation when

there is no bulging of the neck laterally, and when there is not present, as a cause, caries or tuberculosis of the cervical vertebræ. As to the dangers of operating, cutting into the internal carotid has been done, a sudden rush of pus into the larynx of an already weakened child, and in cases of caries of the cervical vertebræ sudden dislocation of the cervical spine and death from pressure on or laceration of the spinal cord have occurred. As a matter of surgical historical interest I will mention that laryngotomy¹⁶ has been performed with alleviation of symptoms, but with a speedy return of the same with a fatal termination; in another case tracheotomy¹⁷ was performed on an adult, the diagnosis being acute laryngitis; this gave immediate relief but death ensued on the second day. There was in this case "total inability to swallow."

All this is prefatory to the following case which presents several interesting features.

CASE.—G. P., age 37, male. Previous history: Had measles and scarlet-fever before he was eight years old. At nine years of age he had an attack of acute articular rheumatism, and he has had at least eight different attacks since the last one, this being four years ago. The first attack was complicated with endocarditis, leaving a mitral regurgitant murmur. He had measles the second time at thirteen, and had an attack of pneumonia in 1890. On February 3, 1895, he was taken with a light form of "la grippe," accompanied with headache, cough, fever, etc., which cleared up in about seven days. February 17th he was taken with headache and pains in the back of the neck, extending from the seventh cervical vertebra to the base of the skull. He was unable to swallow solid food at this time. The pain in the muscles of the neck continued for three days. The inability to swallow solid food continued, and there had been considerable difficulty in swallowing liquids. The amount of fever had not been excessive at any time, staying at about 100° to 101°.

I found the patient emaciated and weak: he coughed a little, and raised scarcely at all. The voice was strong and clear. He complained bitterly that he could not swallow readily. Examination of the oro-pharynx showed simply a congested mucous membrane. Examination of the laryngo-pharynx showed but little more; the only abnormal configuration of the parts was a too close approximation of the lower posterior

pharyngeal wall to the arytenoids, which were slightly swollen and very red. The vocal cords were clear. There was no tenderness in the throat, and there had been no pain in the throat at any time. I was inclined to think that he exaggerated his inability to swallow, and said that he would get better. There was at this time no prominence of the pharyngeal wall except that which I have referred to, which was scarcely noticeable, and indeed the picture was the same that is often presented to the observer as the natural configuration of many throats.

From this time liquid food could be taken only in small quantities, and even this producing a distressing feeling of suffocation, *but without pain*. Dysphagia became more and more marked until March 10th, when he practically could not swallow at all. I again saw the man, and in addition to the subjective symptom of inability to swallow, there was the following appearance presented. The patient had a distressed and anxious look, and there was a marked bulging of both sides of the neck, and the thyroid cartilages were protruded so as to be almost in a line with the chin; it looked as though the whole neck with contents had been bodily thrust forward. I again examined the throat, and found that it was almost impossible to see the arytenoid cartilages on account of an increase of the condition which I had noticed at the preceding examination, but to which I had not given the necessary weight, viz., the close approximation of the lower posterior pharyngeal wall to the arytenoids themselves. I then made a digital examination, and thought that I detected more elasticity posteriorly and very low down than would be ordinarily the case. This was not even then marked. I determined that it must be a case of retro-pharyngeal abscess having its origin quite low down. With a laryngeal knife I made an opening in the median line posteriorly about one half inch above the level of the arytenoids, upon which there was a rush of a large amount of foul-smelling pus. In a short time after this the patient was able to swallow liquids with comparative ease. The depth to which the abscess extended was $3\frac{1}{2}$ inches below the point of opening. The abscess cavity was washed out on the three succeeding days, and I did not see the man again until March 17th. I then found that there was a partial return of the inability to swallow. Examination showed that the wound had practically healed, but there was some bulging below. Another incision was made a little lower than the first one, and there was a daily cleansing of the cavity with injections of hydrogen peroxide for two weeks. It was then treated on every other day until April 13th, the cavity gradually growing smaller. At

this time the patient could take a large amount of liquid nourishment, but was unable to take solid food, and indeed he could not until nearly three months after this time.

The points of interest as regards this case are, first, the lack of acute symptoms pointing to the throat, especially the entire absence of pain and tenderness *in the throat*; and secondly, the long period of convalescence, it being over five months from the beginning of the trouble before the patient could be called well.

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¹² *N. Y. Journal of Medicine*, 1850, p. 32.

¹³ Smith. *Loc. cit.*

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¹⁶ *Archiv. général de médecine*, tom. lvii, p. 257.

¹⁷ *Medico-Chirurgical Review*, vol. ii., p. 518.

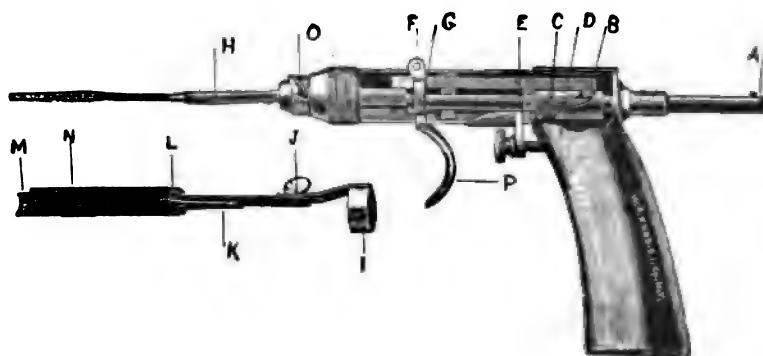
A MECHANICAL SAW AND SEPTAL PLANE.

L. L. MIAL, M.D.

THE cut, showing, as it does, with the outside case removed, the mechanical construction of this instrument, renders but few words for its description necessary. I claim for it :

1st. Minimum vibration, enabling the operator to hold it with ease.

2d. By the brake device (P F G E, friction is applied to the main shaft at E), we have the speed of the stroke absolutely

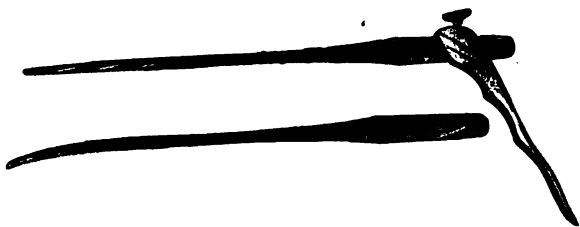


under control, using a fast or slow motion as we may desire. No other instrument has such a feature, and I regard this one of the most important in the manipulation of such a saw.

3d. The septal plane, which is nothing more nor less than a chisel (M), made from *very thin*, hard steel, running in a guard (L N) also *very thin*. It will be seen from the cut how the attachment is made. The handle (K) attaches to the saw rod at H, the ring (I) fitting over the end of the case at O, and secured by a screw. Now the power being applied, the plane is driven fore and aft, just as with the saw. The depth of cut at each stroke is regulated to a nicety by the slide and screw at

J. Usually $\frac{1}{4}$ of an inch is the best set to give. These plane attachments are made in a number of sizes and shapes, just as trephines and chisels. I find the curved or gouge shape the most satisfactory, as a rule, and the V-shape very efficient in making a section from enlarged inferior turbinates.

The saw is the same as that shown here. This was devised nearly two years ago, and has been used by myself and colleagues since that time with great satisfaction. I may safely say that we have found it to cut faster and with less binding



and sticking than any saw previously used. It differs from others in having a curved blade (the straight blade in the cut should be shown curved in opposite direction from the curved one), in which the axis of each tooth is along the radius of the circle of which the curve in the blade is a segment. It will be seen that this gives the rear teeth a forward set and the anterior teeth a rear set, cutting, therefore, on both forward and backward stroke.

It has not been my intention, in presenting these instruments, to show anything especially new, but to give some improvements by which our septal operations may be facilitated.

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SUMMARY OF EYE AND EAR DEPARTMENT.

DISEASES OF THE EYE.

Ciliary Body and Choroid.....	116
Conjunctiva.....	3,215
Cornea.....	1,894
Globe.....	109
Iris.....	218
Lachrymal Apparatus.....	204
Lens.....	391
Lids.....	973
Muscles and Nerves.....	657
Optic Nerve and Retina.....	203
Orbit.....	14
Refraction and Accommodation.....	4,623
Sclera.....	21
Vitreous.....	26

12,664

OPERATIONS ON THE EYE.

Advancement.....	16
Agnew's Operation for Membranous Cataract.....	7
Bowman's.....	51
Cantholysis.....	22
Canthotomy.....	1
Cataract.....	95
Cauterization.....	92
Critchett's Operation.....	9
Curetting Cornea.....	4
Enucleation.....	57
Excision and Incision.....	98
Expression of Trachoma.....	196
Iridectomy.....	60
Keratomyxis.....	89
Paracentesis.....	24
Plastic Operation.....	54
Removal of Tumors, Foreign Bodies, etc.....	635
Sclerotomy.....	10
Tenotomy.....	150
Other Operations. Unclassed.....	34

1,704

DISEASES OF THE EAR.

Auricle and External Auditory Canal.....	770
Internal Ear.....	216
Mastoid.....	38
Middle Ear.....	2,495
Unclassed.....	27

3,546

OPERATIONS ON THE EAR.

Curetting Adenoids of Pharynx.....	95
" Granulations of Tympanum.....	19
" Mastoid Sinus.....	2
Excision of Tonsil.....	39
Incisions, Wilde's, and for Tumors, etc.....	76
Opening Mastoid for Abscess.....	20
Paracentesis Membrana Tympani.....	40
Plastic for Deformed Auricle.....	1
Removal of Tumors, Foreign Bodies, etc.....	67
Unclassed.....	9
	368

Total Number Diseases of the Eye.....	12,664
" " " " Ear.....	3,546

SUMMARY OF THROAT DEPARTMENT.

Diseases of Larynx, Trachea, Esophagus, and External Parts.....	383
" " Mouth and Pharynx.....	583
" " Nose and Accessory Sinuses.....	2,227
Total Cases of Disease Treated.....	3,133
Operations in Larynx and for various conditions.....	17
" " Mouth and Pharynx.....	129
" " Nose and Rhino-Pharynx.....	479
Total Operations.....	625

OPERATIONS.

NOSE AND RHINO-PHARYNX.

For Adenoids in Rhino-Pharynx, Forceps.....	85
" Adenoids and Hypertrophic Tonsils.....	140
" Cyst Middle Turbinate Bone.....	4
" Deflected Septum, Adams' Operation, modified.....	6
" Deflected Septum, Asch's Operation.....	19
" Division Synechia.....	1
" Ecchondrosis of Septum, Bistoury.....	14
" Epistaxis (Ulceration of Septum).....	2
" Ecchondrosis of Septum, Saw.....	67
" Empyema Maxillary Sinus.....	1
" Ethmoiditis, Curettage.....	4
" Exostosis of Septum, Saw.....	41
" " Superior Maxilla, Rouge's Operation.....	3
" Hypertrophy of Inf. Turb., Galv. Caut.....	6
" " " Saw.....	5
" " " Scissors.....	9
" " " Snare.....	7
" " " Mid. " Forceps.....	3
" " " Saw.....	2
" " " Snare.....	13
" Myxomata of the Nose.....	42
" Foreign Body in Nose.....	1
" Sarcoma Naris.....	1
Staphylorrhaphy (Cleft Palate).....	2
Verucca Nasi (Removed).....	1
	479

MOUTH AND PHARYNX.

For Abscess, Circumtonsillar.....	14
" Epuloid Tumor of Gum.....	1
" Adenoids at Base of Tongue.....	17
Hypertrophied Tonsils—Bilateral Excision.....	65
" " Galv. Caut. Puncture.....	5
" " Unilateral Excision.....	15
Sarcoma Tongue.....	1
Papilloma Pillars of Fances.....	1
	129

LARYNX AND UNCLASSIFIED.

For Cervical Adenitis.....	4
Curetting Frontal Sinus.....	1
For Fibroma Vocal Cord.....	1
" Papilloma Larynx (Evulsion).....	1
" Pharyngeal Abscess.....	1
" Necrosis Inferior Maxilla.....	3
" Resection ".....	1
" Tumor of Neck.....	3
Tracheotomy.....	2
	17

